The American School Board Journal

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January *1961*

Annual School Design and Building Issue

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Gymnasium, Riverside School, Riverside, Ill., floor of First Grade Northern Hard Maple.
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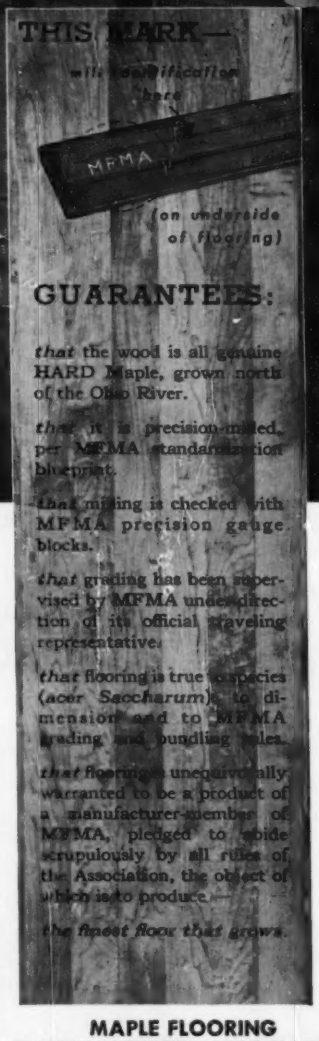
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The American School Board Journal

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OUR COVER

The impressive main entrance of the West Campus High School, Waukegan Township, Ill. For details on these facilites for grades 9 and 10, see page 12.

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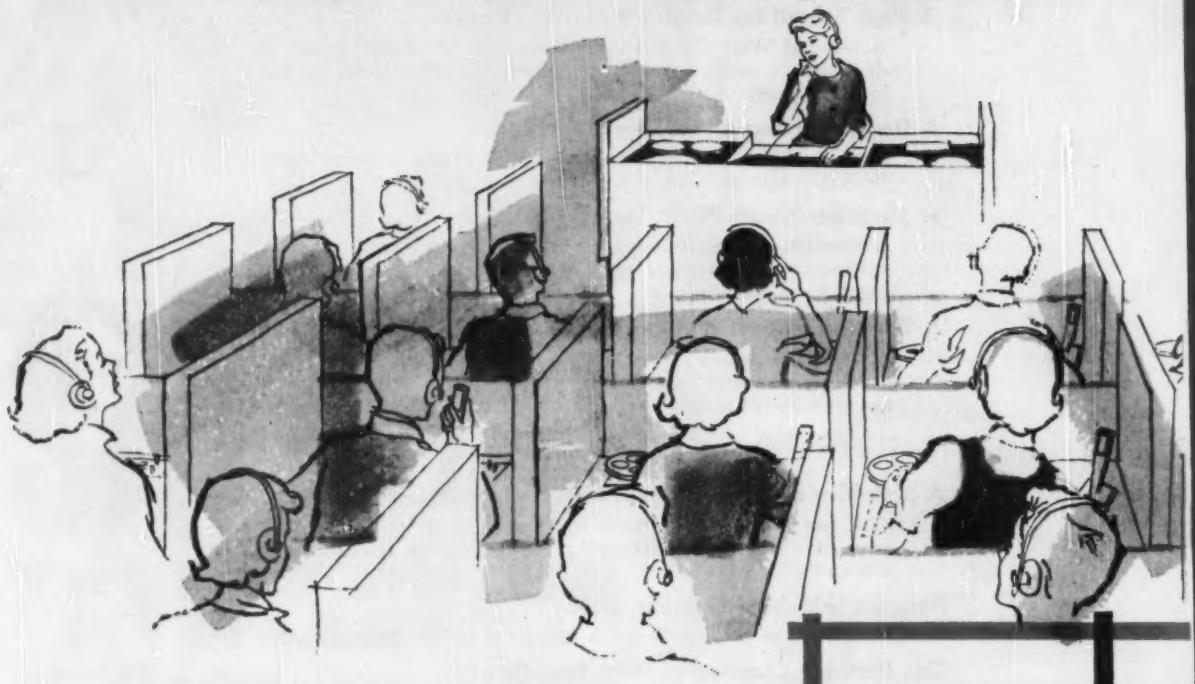

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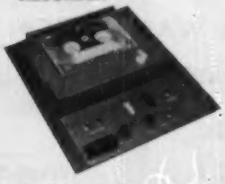

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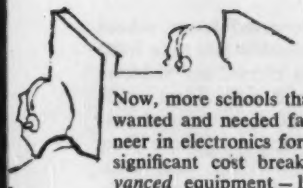

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the school scene

■ **Top-level educational personnel changes** during the past month included:

1. The selection of Connecticut's Gov. Abraham A. Ribicoff as the new Secretary of Health, Education, and Welfare by president-elect John Kennedy. He will succeed the present HEW secretary, Arthur S. Flemming. Mr. Ribicoff will bring to this post a long-time interest in social welfare matters; his appointment is viewed as a significant one since Mr. Kennedy is known to look with priority upon legislation in the health and education field.

2. The resignation of Lawrence G. Derthick as Commissioner of Education to accept the position of assistant executive secretary of the National Education Assn. Dr. Derthick was appointed in 1957 to succeed Dr. Samuel M. Brownell, who resigned to become superintendent of schools in Detroit. Before that, Dr. Derthick had been superintendent of schools in Chattanooga, Tenn., and a president of AASA.

■ The Bureau of the Census has reported **fewer school systems in the United States** — considerably less than half, in fact — today, than in 1942. Efforts carried out successfully in various states to reorganize and consolidate small school units have cut the number of local educational systems in the nation to 42,429 — a reduction of more than 10,000 since 1957, about 27,000 since 1952, and some 70,000 since 1942. Despite this record, the report indicated that there are still a great many very small systems — 7017 without schools and 14,842 (almost 1/3 of the total) with 50 pupils or less. Finally, one district out of three enrolled 300 or more students.

■ **State superintendencies affected by the recent election** included: in Washington, Louis Bruno to succeed Lloyd J. Andrews; William E. Wilson of Indiana, M. F. Coddington of South Dakota; and W. W. Dick of Arizona re-elected for second two-year terms; Adel F. Throckmorton of Kansas for his seventh two-year term; and Thomas D. Bailey of Florida for a fourth four-year term.

■ The appellate division of the New York State Supreme Court upheld the constitutionality of a **daily recitation of a nondenominational prayer in the school.** The prayer, approved by the New York State regents, does not constitute religious teaching. In Baltimore, Md., the school board ruled that pupils who object to opening exercises in the schools — which includes reading from the Bible — may be excused upon the request of parents.

■ In Washington, D. C., the school board has decided to seek **legislation holding up automatic pay increases for teachers who do less than satisfactory work.** Supt. Carl F. Hansen said that "marginal" teachers, who work only enough to get by, are a bigger school problem than inferior teachers.

■ **Minnesota boardmen are overwhelmingly opposed to federal aid to education,** according to a recent survey by the Minnesota School Board Assn. A majority of superintendents, it was noted, favor limited federal aid for construction or for outright grants to school districts for board action. However, the survey also showed that superintendents did not favor federal aid for debt service, for teachers' salaries or for maintenance.

■ A call for more **genuine educational research into the strength and limitations of group tests** was made by Arthur S. Adams, president of the American Council on Education, who warned about the public's "blind notion" that test results are the be-all and the end-all of the educational process.

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NSBA Initiates New Services For Member Associations

W. A. SHANNON
Executive Director
National School Boards Association

In keeping with its belief in "Quality Schools Through Quality Boards of Education," NSBA has instituted a new service to its members — the state associations of school boards — enabling them to better serve their memberships and thus, education. The new service provides an objective, impartial and constructive study of any state association of school boards wishing to heighten the effectiveness of its operations and work with individual boards of education. A team of executive secretaries and officers of other state associations will make the survey.

Minnesota First to Use Survey Study

From October 28–31, the Minnesota School Boards Association was studied from top to bottom by a six-man survey team composed of a president and four executive secretaries from other state associations, and the associate executive director of field services for NSBA.

At the invitation of the Minnesota association's executive secretary W. A. Wettergren and the board of directors, the survey team delved into all aspects of the association's organization and operation. The four-day study ended with team members presenting a two-hour oral report to their hosts. The team is now preparing a formal, written report of the survey.

The four executive secretaries on the visiting team were: Fred G. Thatcher, Louisiana School Boards Association; George Tipler, Wisconsin Association of School Boards, Inc.; Elmer W. Stanley Washington State School Directors' Association; and Dr. Lewis E. Harris, Ohio School Boards Association. Blythe C. Conn, state legislator and president of the Iowa Association of School Boards, Inc., and Dr. Harold V. Webb of NSBA completed the team.

The survey service was proposed by Dr. Webb at the annual workshop of state school board association secretaries in Chicago last April. He emphasized that the survey's purpose would be to provide meaningful, vigorous assistance to state associations by making possible an objective, impartial examination of the state association's program and activities.

Before the study began, Mr. Wettergren provided each man with information, records, and publications covering the association's goals and activities. These were carefully examined by team members in preparation for the on-the-spot study.

The time in Minnesota was spent interviewing a variety of persons such as the executive secretary and his staff, the education writer for a leading newspaper in the state, the chairman of the Senate's education committee, superintendents and board members from throughout the state, heads of other state organizations with whom the association co-operates, and the association's board of directors and officers.

The time put in by the six-man team on behalf of the association during their stay in Minnesota added up to the equivalent of 37½ eight-hour days.

Although no official evaluation will be issued by NSBA until the formal report is completed, Mr. Wettergren has written as follows: "All in all, we feel that it was a tremendous effort and certainly should have a number of future implications. I would hope that another state might have an evaluation before the 1961 annual convention in Philadelphia. This would tell a much broader and instructive story than if only one report was discussed at the convention."

Each team member felt that it had been an extremely valuable experience and that he had gained new insight into the operation of a school board organization which would also help his own association. They also felt that the findings and recommendations of the survey team should prove beneficial as a long-range guide.

Immediately following the oral report, the team met to review its own operation and to record its reactions as a basis for improving the service should another state request it.

Principles Established for Evaluation of Associations

There should be a wide range of persons available for interview by the survey team, including not only members of the association being surveyed, but also members of the board of directors and the executive staff, representatives of groups with which the association works, legislators, and such others as may be appropriate.

Some definite effort should be made to interview persons critical as well as those who are complimentary of the association's operation.

More time than was used in the Minnesota study should be made available to the survey team for preparation of its reports. Certain preparatory activities, such as extensive self-evaluation, should be made by the association being studied.

The survey team should consider in its report the practical problems involved in carrying recommendations into operation.

The practice of having the executive director of the host state approve and help select the members of the survey team, as was the case in Minnesota, should be continued.

Survey Is Expansion of NSBA Field Service

The new survey study was planned and developed as an integral part of NSBA's field services. The association's associate executive director of field services participates in regional meetings of state school board associations where emphasis is placed on assisting the leadership to improve the quality of services offered by the state organizations. At the four regional meetings there is an exchange of materials, publications, and ideas among the leaders of each state school board association in the regional group. These meetings are particularly valuable as leadership training sessions for vice-presidents, presidents-elect, and other officers and directors of the state associations.

On a national scale, NSBA operates two workshops at its annual convention. One, the pre-convention workshop for state association executive secretaries, provides an opportunity for these key association personnel to work together on common problems of organizational management. The other is a workshop for the two voting delegates from each of the 52 state and territorial affiliates of NSBA. At this workshop, delegates have an opportunity to study background information needed to give wise consideration to NSBA policies and resolutions. The delegates also make a careful study of revisions in the constitution which may, from time to time, be necessary. ■

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Government of Public Education for Policy-Making

Edited by William P. McLure and Van Miller. Paper, 103 pp., $2. Bureau of Educational Research, University of Illinois, Urbana, Ill.

In this seminar leading professors of school administration discuss theory, current conditions, and trends in the national, state, and local structure of government for education. One paper seeks to find a lesson for American schools in the administration of European and Asiatic countries. Important emphasis is placed in several articles on the schools and the revenue system.

It is interesting that these professors of school administration are at long last listening to a competent expert in the field of political science in connection with the politics and policy making for educational administration. In this group of papers, the article on *The Structure of Educational Government* by Prof. Wm. P. McLure, and the discussion on *The Processes of Policy-Making* by Roald F. Campbell are particularly significant and judicious in outlook.

The Gifted Student

By J. W. Getzels and P. W. Jackson. Paper, 83 pp., 35 cents. Superintendent of Documents, Government Printing Office, Washington 25, D. C.

This monograph, the second of a series, includes four research projects the central purpose of which was to discover significant variables differentiating the creative from the intelligent person. The present study examines achievement motives, school performance, and teacher preferences of two types of adolescents: those high in creativity but not in IQ, and those high in IQ but not in creativity.

High Spots in State School Legislation, 1960

Paper, 46 pp., 50 cents. Research Division, National Education Association, Washington 6, D. C.

This report covering the period January 1 to August 1, 1960, summarizes for 23 states both the legislative goals of state education associations and the important school laws enacted.

Fire Prevention Code

Paper, 210 pp. National Board of Fire Underwriters, 85 John St., New York 38, N. Y.

This revision of the National Code includes regulations for schoolhouses based on the causes of the Chicago school fire disaster of 1958. In the main, it requires well accepted construction practices and better housekeeping.

Industry Aids to Education

Prepared by Robert M. Burnett. Paper, 46 pp. New England Council, 1128 Statler Bldg., Boston 16, Mass.

In industry aids to education there exists a rich variety of resources which can be extremely valuable to education. Those schools that have used them are proving this value every day. The fact, therefore, that they are so little used, that this wealth of resources remains largely untouched, demands the most critical analysis if our schools are to benefit.

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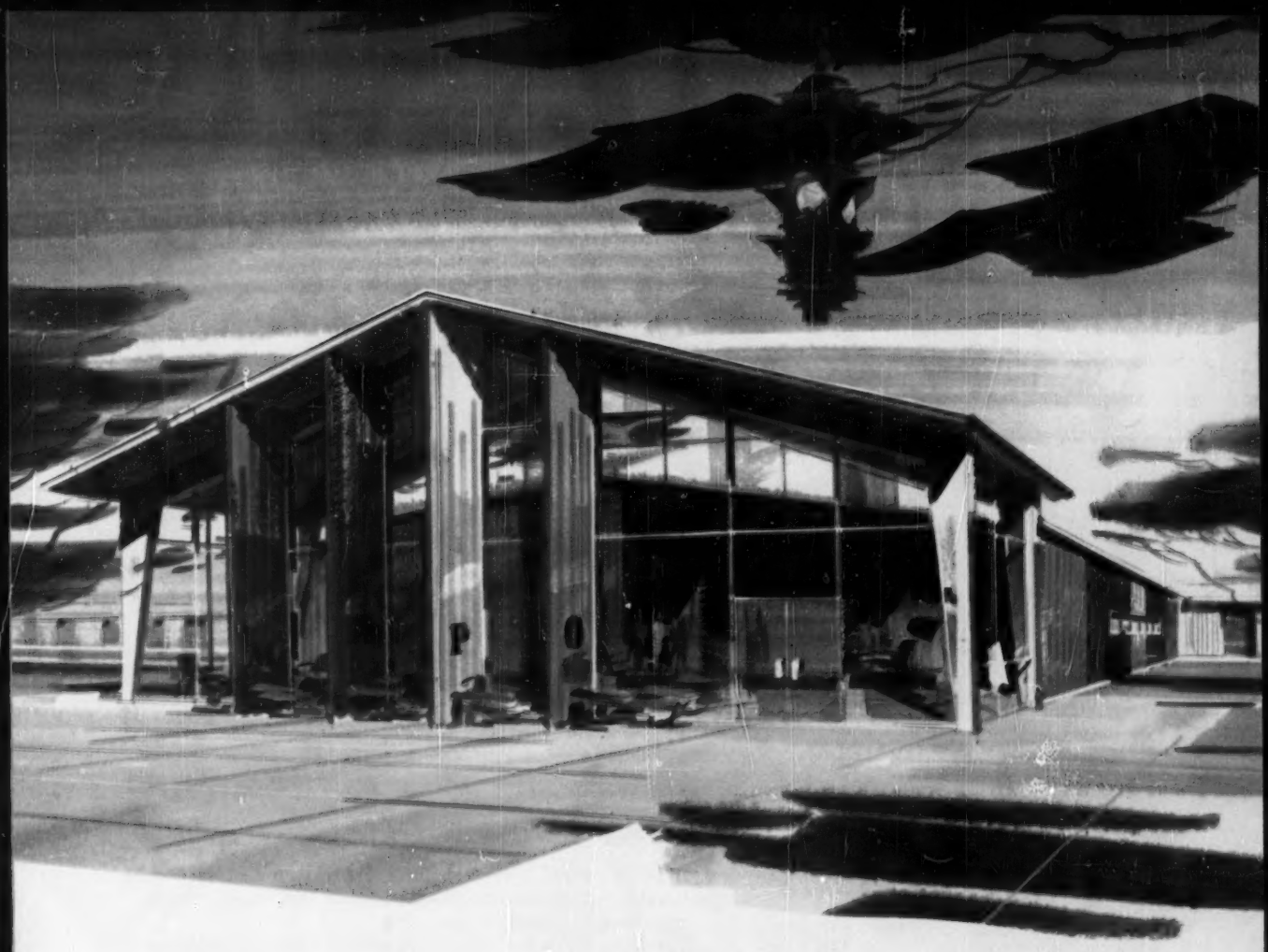

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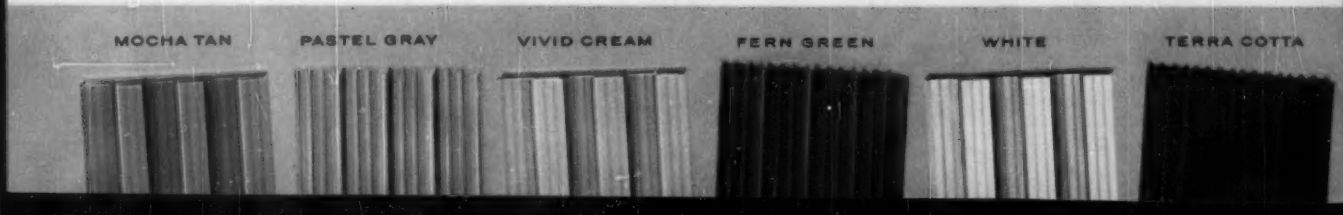

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St. Johns Memorial Gymnasium, Clinton, Mass.
ARCHITECT: *Hajian & Malkasian Associates, Boston, Mass.*

Interior, gymnasium, Saranac, Michigan

Broadview School, Broadview, Saskatchewan, Canada
ARCHITECTS: *Black, Larson and McMillan & Associates, Regina, Saskatchewan*

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1961

With this 38th annual school building issue, we are beginning an expanded editorial coverage of the school plant.

In an era of ever increasing school enrollments — accompanied by growing demands on the school dollar — it is imperative that board members, administrators, and architects work together to create the most effective possible schoolhouse facilities. For we realize that the success of the students' efforts in the school depends, to a large extent, upon the environment provided them by the physical layout and equipment of the plant.

While we will retain our features on school policy and administration, each issue of your SCHOOL BOARD JOURNAL *will concentrate on illustrating examples of "sane" schools — schools whose designs facilitate their educational concepts in a functional, attractive, and economical manner. In addition, we will publish a wider selection of material on planning, building, maintenance, etc.*

In this issue, you will find a report on four schools plus a variety of articles on design, heating, lighting, maintenance, etc.

We hope you'll find our offerings helpful in your vital work of designing and constructing our country's expanding school plant. ■

William C. Bruce,
editor

A High School for Grades 9 and 10

West Campus High School, Waukegan Township High School. Facilities for a varied program to prepare students for more specialized work in the last two years of high school. Superintendent is Dr. Merle Kaufman. Architects were Ganster & Hennighausen, Waukegan, Ill.

RALPH S. BROTHERTON

Mr. Brotherton is secretary-business manager for the Waukegan Township High School District board of education, Waukegan, Ill.

When the Waukegan Township High School District board of education realized a new high school was needed, it agreed upon a four-pronged plan of action which included: (1) the employment of an administrative director experienced in planning schools to guide it and the architects in designing the building; (2) the selection of an architectural firm; (3) the organization of school and community groups to assist in determining building needs; and (4) the development of a program to expedite all phases of the building procedure.

The result of this well-ordered and careful planning, Waukegan's West Campus High School combines functionality with aesthetic appeal. This structure helps to bring to every student the opportunity for fulfillment of the desire of the citizens of the community to give its young people a broad, though varied, program to prepare each one for his role in life.

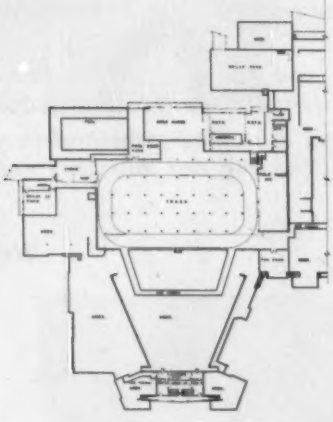
West Campus High School is a comprehensive ninth-tenth grade school designed to ready the students for the more intensive specialized work of the last two years of high school.

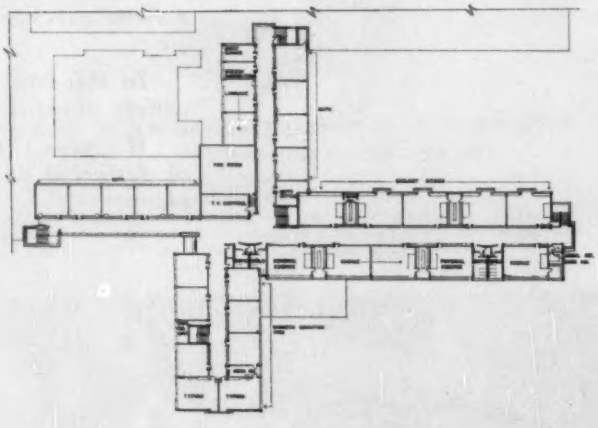
Areas of specialization at West Campus include, in addition to the facilities for the fundamental curriculum program, special physical provision for instruction in "The History of Civilization" (a course for two years of study developed by the system's department of social studies faculty in an attempt to improve the curriculum) and special provision for study in depth in foreign languages.

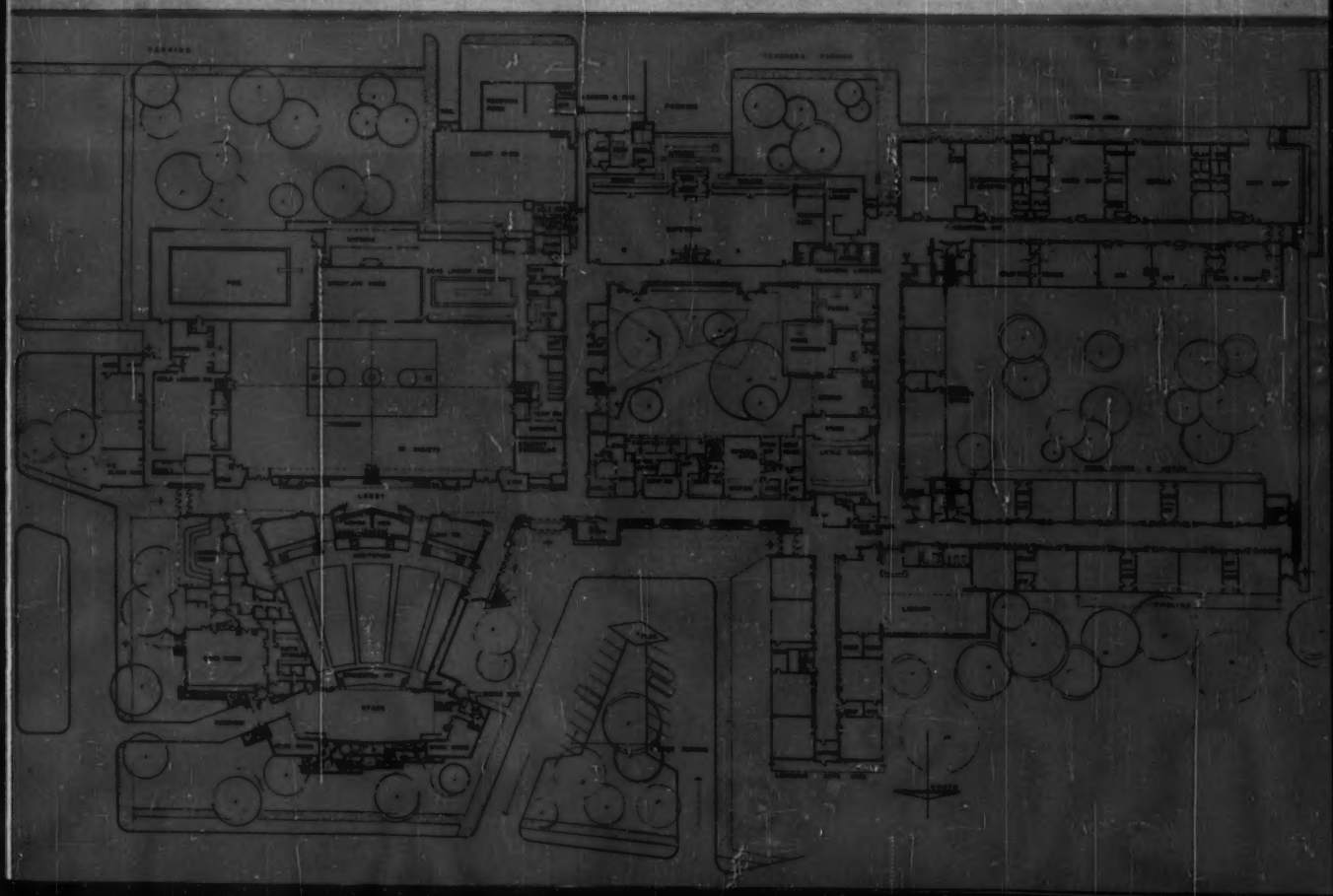
Modern laboratories have also been designed for the physical sciences. In planning, special emphasis was given to modern concepts in audio-visual instruction, including a language laboratory and provision for televised instruction.

A small auditorium for 200 students (or adults), and a modern stadium-type auditorium seating almost 2000 persons afford accommodations for school assembly activities, as well as for adult civic and theatrical efforts.

The physical education plant also has community use possibilities. The 100 by 200 ft. gymnasium provides







Facilities
classrooms, 42
art, 3
commercial, 4
science, 10
library, 1
music rooms, 12
industrial arts, 7
auditorium (seating 1968)
gymnasium (96' x 184')
cafeteria (seating 528)

Construction
Site: sloping, wooded (19 acres)
Foundations: reinforced concrete
Framing: steel
Floors: first floor, poured concrete slab on grade; upper floors, poured concrete slab on corruform; floor finishes — vinyl asbestos, terrazzo, wood
Exterior Walls: 12" "Farren" wall, 4" brick, 4" air space, 4" block
Interior Walls: brick, concrete block painted, wood paneling, glazed tile
Chalkboards: composition
Windows: steel projected sash
Sills: glazed tile
Doors: interior, flush panel, birch; exterior aluminum
Ceilings: metal pan acoustical
Roof: four ply, insulation, poured gypsum, gymnasium: four ply insulation, poured gypsum, insulating form board
Millwork: hardwood cabinets, formica counter-tops
Electrical: fluorescent light fixtures in classrooms, balance incandescent light fixtures
Plumbing: floor type water closets
Heating: wall vectors; radiant ceiling panel; low pressure steam boilers, oil fired.
Ventilation: air supply system; exhaust fans in toilets and necessary interior rooms; office suite air conditioned

Costs
bid cost, $4,310,965.00
square feet, 293,346
cost/sq. ft., $14.70
capacity, 2000
cost/student, $2,156.00
sq. ft./student, 146.6

Products
Heating: controls, Minneapolis-Honeywell; boilers, Pacific, unit ventilators, Trane
Electrical fixtures: Lithonia, Guth, Lighting Products; program clocks and fire alarm system, Edwards; public address system, DuKane
Sanitary: toilets, urinals, and bowls, Eljer; drinking coolers Halsey Taylor; flush valves, Sloan
General: science furniture, Kewaunee; auditorium seating, American Seating Co.; cafeteria tables, Virco; library furniture, and shelving, Remington Rand
Basic construction: paint, Pratt & Lambert, Gliddens; flooring, Johns Manville

auditorium

four teaching stations. On the lower level is an indoor track of the same size. In addition, the swimming pool, wrestling areas, and outdoor facilities are well-zoned for student-adult utilization.

The site size of 28 acres will permit building expansion in two directions. The site provides a beautiful setting for the school's west wings with the library's wall-height windows facing a lawn and oak tree covered terrace. The east portion of the campus provides an area for outdoor girls' physical education, and a paved space for ROTC drill and boys' physical education activities.

West Campus will house 2000 ninth and tenth grade students in an optimum situation; flexibility of space allocation room for several hundred more if an occasion should require such use before additional building space is made available. The building can easily be converted into a four-year high school if such a conversion is necessary in later years. ■

upper, left: typical classroom; upper, right: science room.
lower, left: library; lower, right: gymnasium.

A Design for Team Teaching

Bear Creek Junior-Senior High School, Jefferson County, Colorado. A physical layout with flexibility for the team teaching concept. Architects of the school are Musick & Musick, Denver, Colorado.

ROBERT H. JOHNSON

Dr. Johnson is superintendent of the Jefferson County Schools, Lakewood, Colo.

The Bear Creek Junior-Senior High School in Jefferson County, Colo., is a new school, both in structure and design for instructional program.

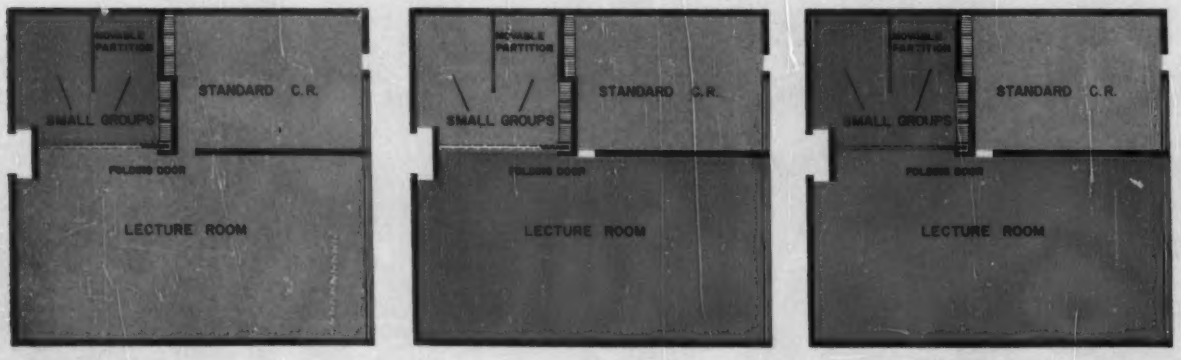
During the past three years, the Jefferson County Public Schools have been engaged in an experimental program, partially supported by the Ford Foundation Fund for the Advancement of Education. The experimental program has dealt with team teaching and schedule modification, and the Bear Creek Junior-Senior High School is designed to accommodate the new instructional program which, in many ways, is a radical departure from the traditional.

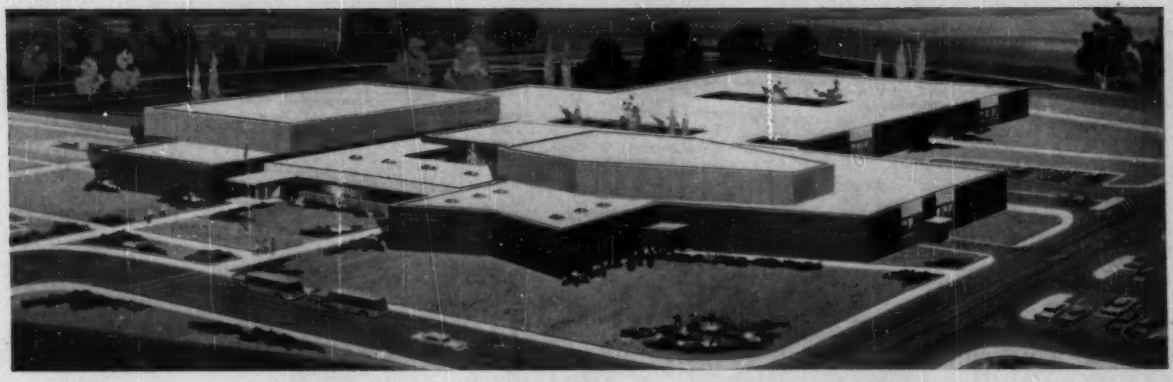
The team teaching approach, for which facilities have been included in this building, utilize classrooms of various sizes during the normal school day and school week. A class of 120 or 180 students is not uncommon on a day when a new basic concept fundamental to a subject is being introduced. On other days of the week, it may be deemed advisable to divide the group into several classes of 30 pupils each, or one or two teachers may work with a group of 100 students and other teachers take groups of 8 to 12 students into separate sessions for either remedial or advanced work in the subject area. The technique of team teaching provides more preparation time for the classroom teacher and provides more individual attention for pupils, thus both the teaching staff, the student body, and the community are solidly behind the idea of providing structural facilities to meet the needs of the team teaching approach to instruction.

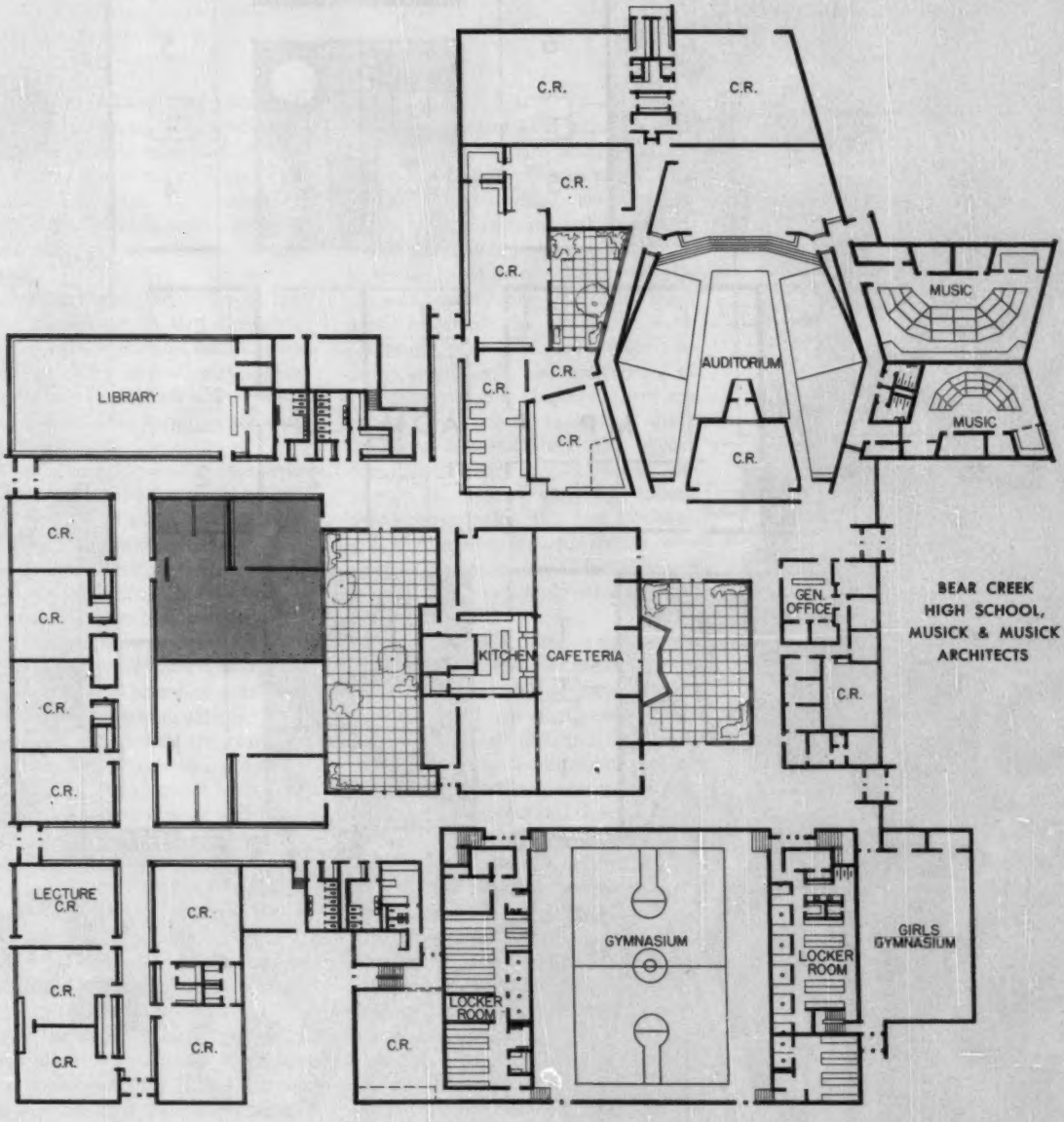
If classrooms are to be utilized to the greatest possible extent, while at the same time accommodating a class size of either 120 or 15, it is necessary to provide rooms of various dimensions and provisions must be made for changing the dimensions of rooms quickly and economically.

In the floor plans of the Bear Creek Junior-Senior High School, an area ordinarily devoted to eight classrooms has been modified to accommodate the team teaching program. If additional classrooms are added to the building, additional units providing for team teaching will be added, as well as typical or conventional type classrooms. Examination of the unit devoted to team teaching will show its versatility in providing for classes of varying size. If the instructor stands at the corner of one room, she can lecture to students located in three rooms or one room may be closed off and students in two rooms taught as a group, or each room may be operated independently, thus, providing four classrooms in the area. It should be noted that in one classroom provision has been made to accommodate two small groups of students working either independently or with an instructor, while instruction is presented to students in the other two rooms. It should also be noted that one of the classrooms in the group is extremely versatile, because a group of students from the large class can be taken directly into the classrooms, or if the team of teachers does not use the room during a specific period, the room can be used by other classes and entered from the hall, thus, not disturbing the team teaching situation. ■

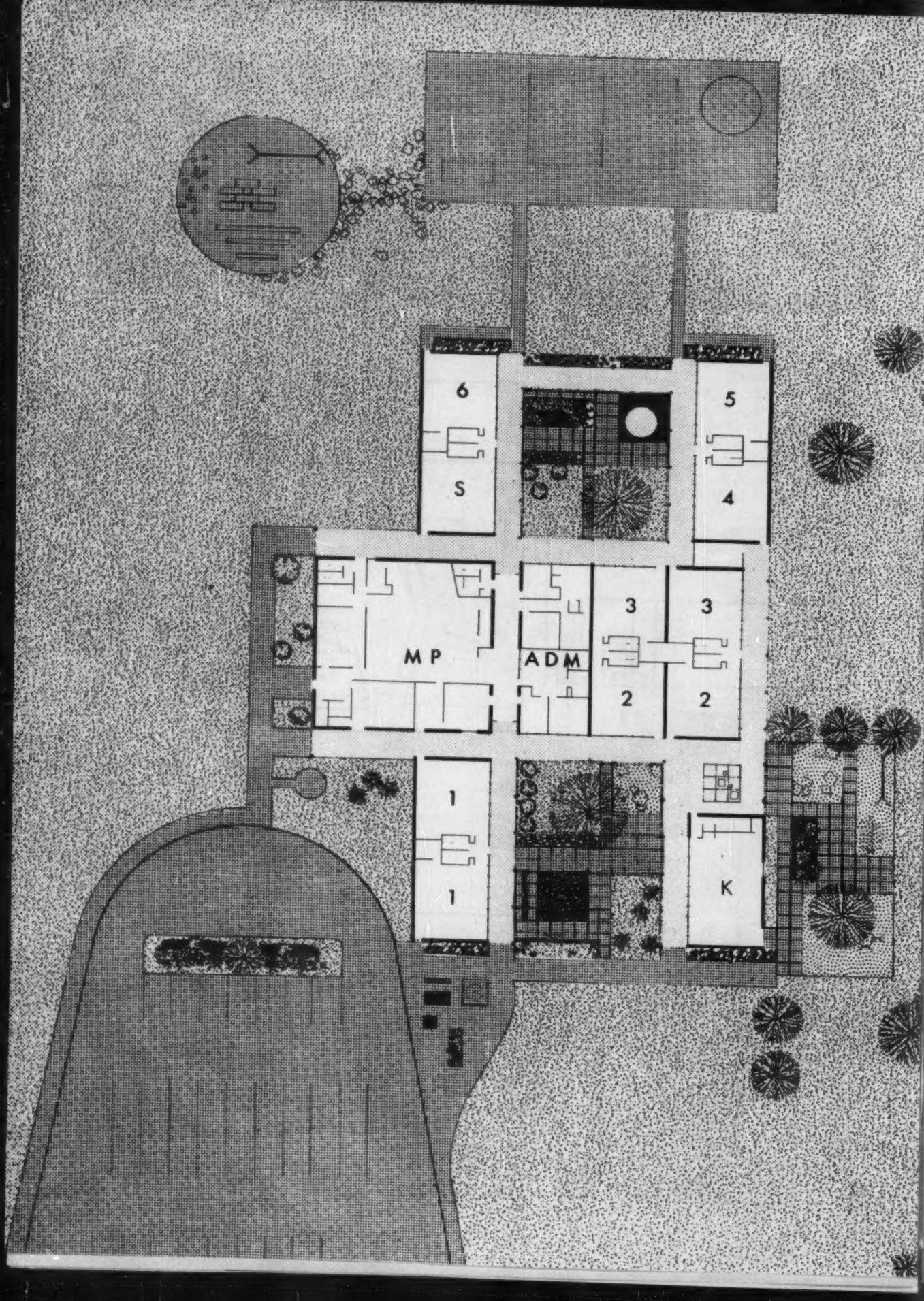
Three possibilites in different utilization of space in the flexible team teaching unit concept as designed for the Bear Creek School.







BEAR CREEK HIGH SCHOOL, MUSICK & MUSICK ARCHITECTS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A Modified Court Plan

ARTHUR G. JAMES

Mr. James is supervising principal of the School District of Lansdale, Lansdale, Pa.

Oak Park Elementary School, School District of Lansdale, Pa. A "home school" environment for a basic primary program in a "unified court plan" for a minimum site. Architects for the school were Nolen & Swinburne of Philadelphia, Pa.

The purpose of the joint efforts of the school personnel, the architects, and the lay people who planned the Oak Park Elementary School in Lansdale, Pa., was to produce a "school home" which would contribute in every way to a basic primary program.

Classrooms lend themselves to this educative program in that they provide adequate space and facilities for formal teaching and display. They are large and flexible enough to make use of the movable furniture for variable grouping.

Sinks in each classroom, lavatories for each unit, and substantial storage space remove much of the disturbance found in the conventional classroom. Sound retardant ceilings make a special acoustical contribution to the teaching-learning process. The quiet, multi-colors used in each classroom creates a pleasant learning atmosphere as one phase of conditioning the child's learning attitude.

As new approaches are being explored for better techniques of teaching, the Oak Park school layout can be adjusted to any change which may occur. Presently, a single unit is used for Saturday morning foreign language classes. Pupils have access to this unit without opening the entire building. Any unit or units are readily accessible for community activities or a summer recreational program.

The school's design groups all units about two courts but unites them under one roof. The classrooms are independent. Communication is afforded by open walks with 10-foot overhangs to provide shelter, reduce glare, and control heat gain. Central to all other areas are administrative offices and the all-purpose room. The result is an informal environment found in few institutional buildings.

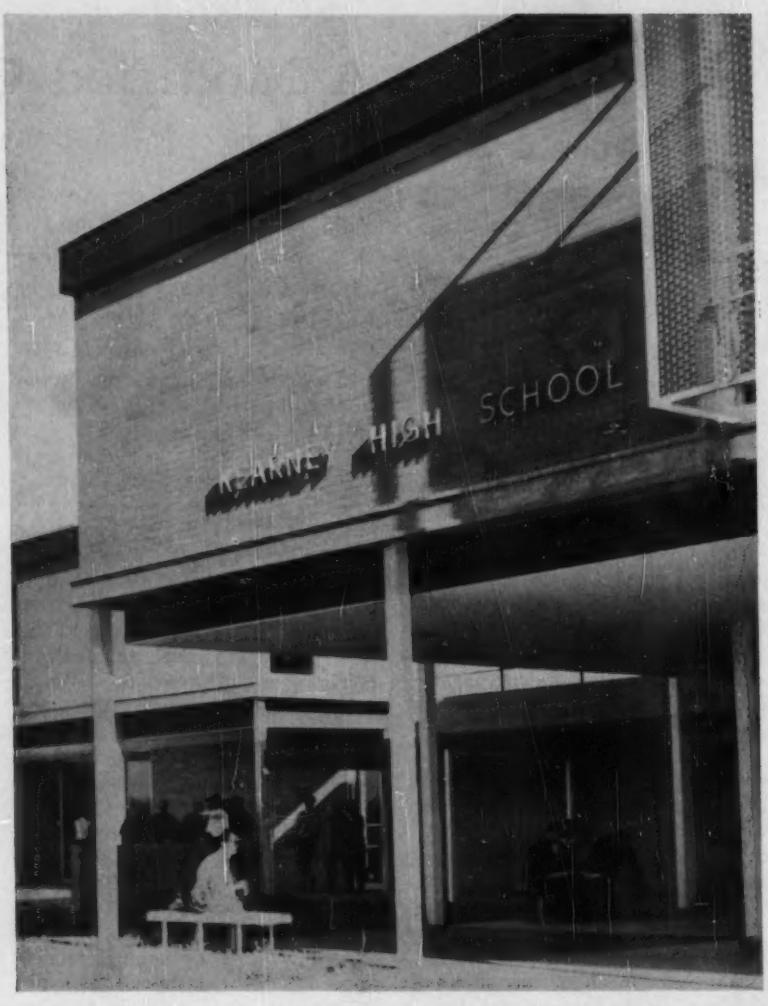
For discussion purposes, the space is divided between classrooms, all-purpose room, and administration area. Although the design of each classroom varied with such factors as grade, pupil load, and preferences of the principal and teachers, there are general similarities. Education space averages approximately 850 square feet. Each pair of classrooms surrounds a core containing toilets, wardrobes, work sinks, and mechanical ventilation. In addition to windows, translucent roof domes admit natural light to supplement artificial illumination.

All classrooms have access to the all-purpose room located in the center. Around the all-purpose room are arranged compactly the stage, kitchen, storage facilities, and service areas. The auditorium projects above the lower roof areas, providing light and ventilation. Lobby space for the all-purpose room doubles as a reception area for administrative offices, resulting in an impression of larger space for both areas.

Immediately opposite the all-purpose room is the administration area. Instead of the usual formidable array along a corridor, administrative offices are grouped around a central waiting area. The office space is divided into well-proportioned rooms that combine efficiency with warmth. The offices and lobby look directly onto the courts.

Facilities
classrooms, 9
kindergarten
all-purpose room
kitchen
special education
speech room
reading room
curriculum materials
administration area

Costs
bid costs, $419,000
cost/sq. ft., $16.40
capacity, 363
cost/student, $1,140



A Zoned Compact Plan for a Basic

PAUL MORRIS

Mr. Morris, Superintendent of Schools in Kearney, Neb., is shown above (center) with the architects of the district's new high school, Bill Caudill (left) of Caudill, Romlett, and Scott of Oklahoma City, Okla., and John Helleberg, Jr., of Helleberg and Helleberg, Kearney.

The Kearney, Neb., High School. Facilities for a varied, comprehensive program with the accent on college preparation, designed with an "academic hub" and surrounding "activity zones." Architects for the school were Caudill, Rowlett & Scott, Oklahoma City, Okla., and the firm of Helleberg & Helleberg, Kearney, Nebraska.

Academic Program

Basic to the planning of the new Kearney, Neb., high school was the need for providing a rather varied type of secondary program.

Surveys of the activities of Kearney High School graduates in recent years indicate that considerably better than half of them attend college locally and elsewhere, and the same prognosis could be made for the graduates of the foreseeable future. The varied types of agricultural practices by the surrounding rural contributing areas range from intensive irrigation, high production activity to a semi-ranching livestock emphasis. The increasing number of small local manufacturing and machinery concerns call for a source of semi-trained future employees.

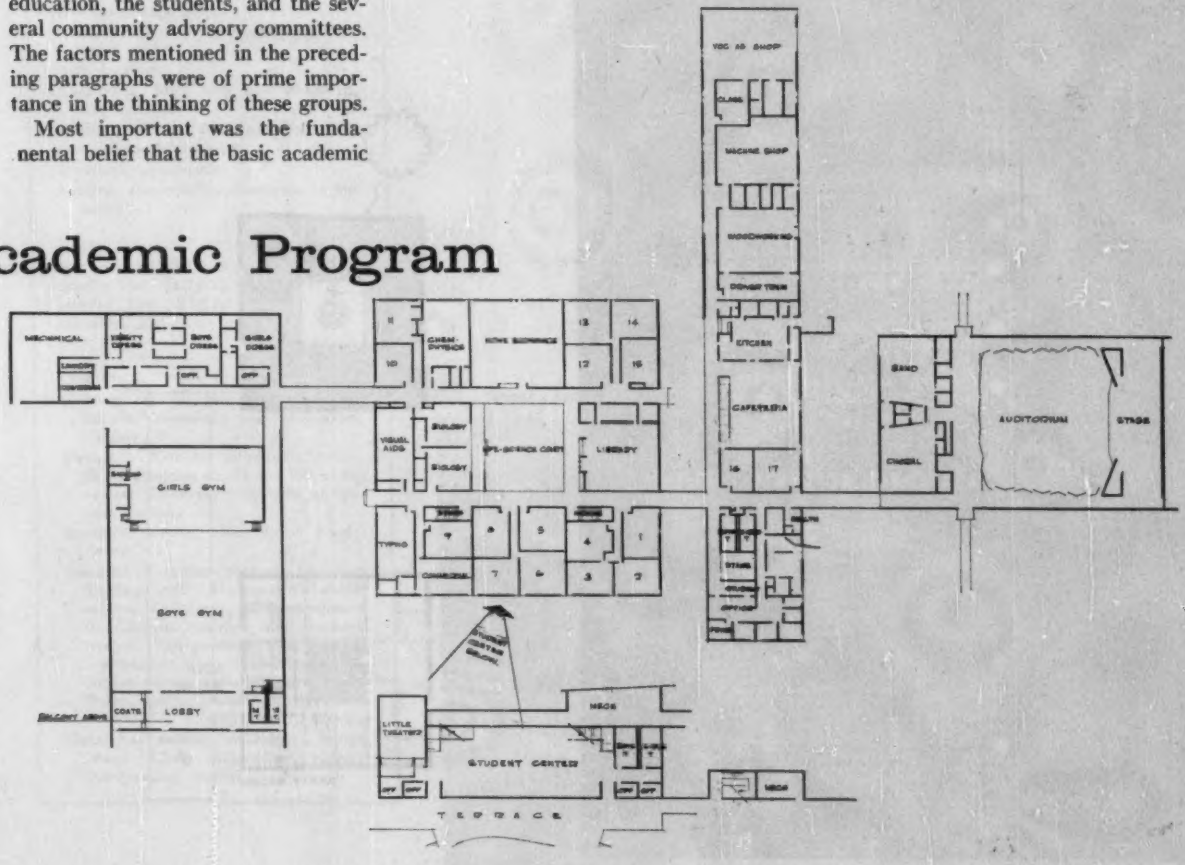
Various co-ordinating planning groups worked on the preliminary planning details. These were the architects, the faculty, the board of education, the students, and the several community advisory committees. The factors mentioned in the preceding paragraphs were of prime importance in the thinking of these groups.

Most important was the fundanental belief that the basic academic program was the matter of first consideration. Therefore, the core of the building is the central academic unit designed to be tributary to a well-equipped library as the source and nerve center of the program. This was achieved by designing the academic unit around a central court, with all the corridors leading to the library just off this court.

The remainder of the building is "activity-zoned." The industrial arts, machine trades, and vocational agriculture centers are placed in one wing, the music and dramatic arts activities are placed in another wing, somewhat separated from the other units to handle the noise factor. The physical education program is housed in another wing. Each of these wings is connected with the central academic unit by short corridors.

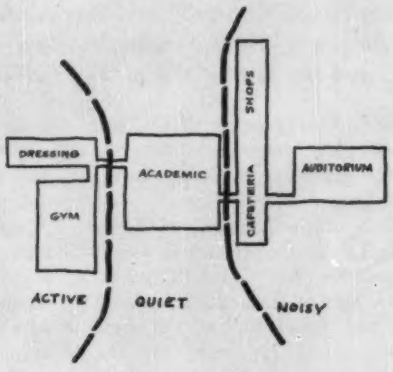
One of the fundamental beliefs of the planning groups was that there should be an area which is primarily for students. This was achieved by placing a student concourse or "commons" in a basement level area which opens by means of a glass window wall, overlooking a hillside and terraced ravine. This area contains all the student lockers, and is equipped with "student-selected" furniture for use before and after school and at noon.

The entire building was designed to be placed on the level land at the top of a hill to the north of the town. There is very little northern glass exposure, because of the cold winds which sweep in from that direction. The building is of one story construction, with the exception of the student concourse which is placed immediately under the southern half of the academic unit and to which two broad stairways lead.



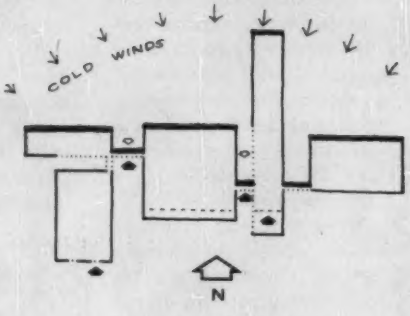
ZONED COMPACT PLAN

- DECENTRALIZED ENOUGH TO PROVIDE GOOD EDUCATIONAL ZONING
- COMPACT ENOUGH TO COPE WITH WEATHER CONDITIONS



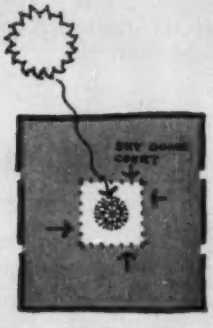
COLD WEATHER ORIENTATION

- SCHOOL TURNS ITS BACK ON COLD BLASTS
- MAJOR ENTRANCES FACE SOUTH
- LIMITED FENESTRATION



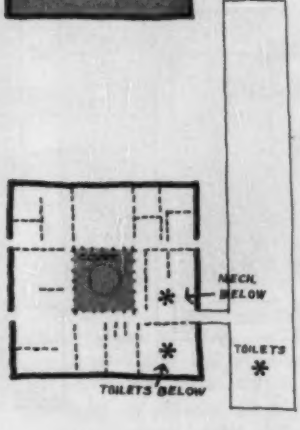
ALL WEATHER COURT

- HEART OF ACADEMIC LOFT
- REMOVABLE TRANSPARENT SKY DOME
- VIEW FOR INTERIOR CLASSROOMS
- NATURE LABORATORY FOR ADJACENT BIOLOGY ROOMS
- EXPERIMENT - AREA FOR HOME ECONOMICS AND AGRICULTURE
- A GREEN AREA FOR STUDENTS TO ENJOY, PARTICULARLY IN THE WINTER



ADAPTABLE ACADEMIC LOFT

- FIXED FACILITIES (MECHANICAL & TOILETS) ARE LOCATED IN ADJACENT AREAS
- PARTITIONS ARE MOVABLE
- THEREFORE, MINOR TO MAJOR CHANGES IN THE EDUCATIONAL PROGRAM CAN BE ACCOMMODATED EASILY



home economics room

The building is also designed so that such areas as the auditorium, the little theater, the cafeteria, and the gymnasium may be reached and utilized by the general public without disturbing in any way the routine work of the school.

Noteworthy features of the school are the use of interior light through roof bubbles and borrowed light, the use in all rooms of white oak paneled walls, and with clear glass panels from door height to the ceiling. Most of the construction is of the modular type and room arrangements may be altered by the removal of walls with a minimum of labor.

The building is located on a large 40-acre site which is responsive to beautiful landscaping and planting effects, and has as well large level physical education areas.

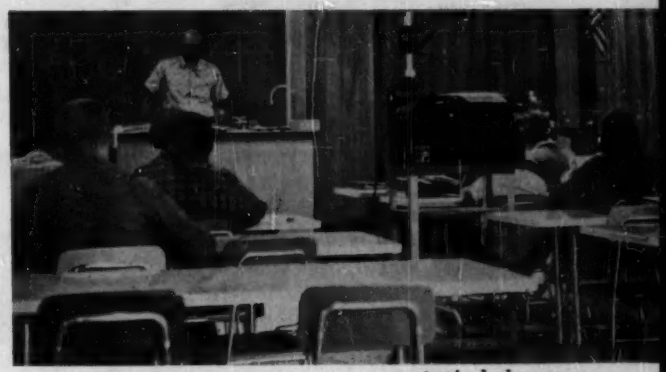
The most striking feature of the building is the life science court, which forms a hub around which all student traffic revolves. This is roofed with a clear plastic dome, and already contains a colorful array of flowering shrubs, annuals, bird cages, animal cages, etc. It is maintained quite largely by students, who take a tremendous pride in the beauty of the area and the attention which it receives from visitors. ■

Facilities
classrooms, 17
commercial, 2
science, 5
library
music room, 2
industrial arts, 4
auditorium (seating 1048)
gymnasium (seating 2500)
cafeteria (seating 200)

Construction
exterior facing, brick
construction, steel frame and laminated wood
roof, built-up
classrooms, brick and oak paneling, vinyl-asbestos
auditorium finish, wood paneling
gymnasium finish, brick
electrical, fluorescent
heating, steam boiler converted to hot water

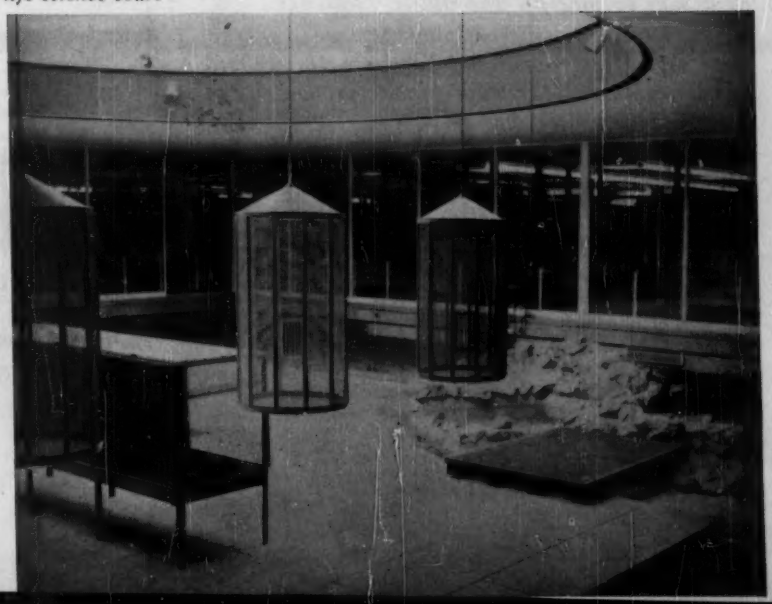
Costs
bid cost, $1,489,085
square feet, 140,000
cost/sq. foot., $10.63
capacity, 825
cost/student, $1,955

Products
Heating: controls, Johnson Service Co.; boilers, Kewanee; unit ventilators, Nesbitt
Electrical: fixtures, Litholier, Shalda, Guth; program clocks and fire alarm system, Edwards; broadcasting system, DuKane
Sanitary: toilets, urinals and bowls, Crane
General: classroom seating, American Seating and Haywood-Wakefield; science, Kewaunee; home economics, St. Charles cabinets and Hotpoint ranges, refrigerators and laundry equipment; library shelving, Remington-Rand; industrial arts tools, Delta; auditorium seating, Heywood-Wakefield; folding chairs, Krueger
Cafeteria: tables, Mid-west; range, Magic Chef; dishwasher, Hobart; refrigerator, Herrick



a typical classroom

life science court



Emerging Instructional Patterns and School Design

Spurred on by an ever-increasing school enrollment and an expanding body of knowledge which must be presented to this explosive student population, movements within recent years have been developing new approaches toward achieving quality education in quantity or for all our children. These new patterns in instruction revolve around the concepts of assisting the classroom teacher in improving her presentation of subject matter through human and mechanical means.

Teaching teams, instructional and clerical aides, "self-tutorial devices," etc., are emerging as a way to meeting the above challenge.

As these new instructional patterns emerge, they will alter traditional concepts throughout most aspects of the educational process. And school design will be among the first to incorporate these concepts.

On the following pages, four leading schoolhouse architects present their ideas on just how these emerging instructional approaches will affect school design as background to your thinking on the new school buildings you will plan and build in the years ahead. . . .

1

RAYMOND A. ORPUT

Mr. Orput is president of Orput-Orput and Associates, Inc., architects-engineers of Rockford, Ill.

2

C. WILLIAM BRUBAKER

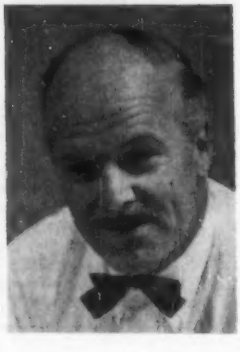
Mr. Brubaker is a designer with the firm of Perkins and Will, Chicago, Ill., and White Plains, N. Y.

3

WILLIAM CAUDILL

Mr. Caudill is a partner in the firm of Caudill, Rowlett, and Scott with offices in Houston, Tex.

4



LESTER C. HAECKEL

Mr. Haeckel is an officer with the architectural firm of Wm. B. Ittner, Inc., St. Louis, Mo.

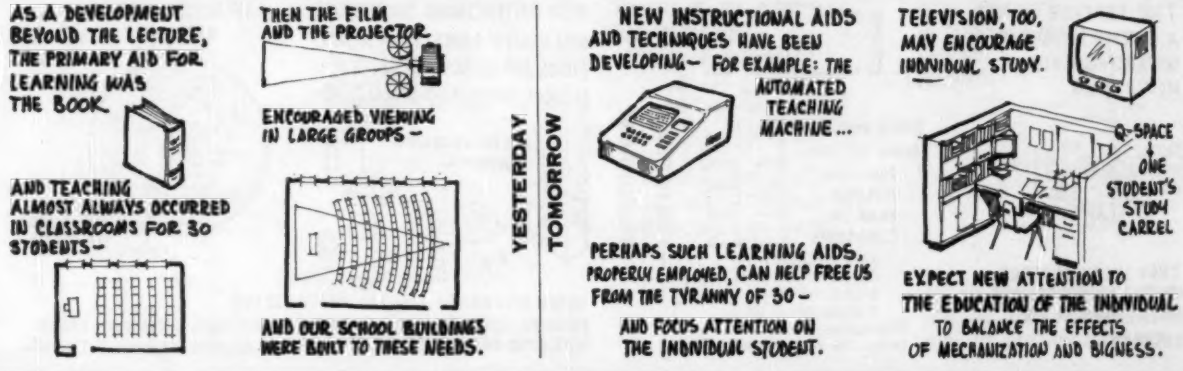
Architects today are standing on the threshold of a new era in school architectural design (unprecedented in our history) which is demanding a completely new approach in planning school buildings. These buildings must function properly and imaginatively and in complete compatibility with the newly applied teaching techniques being widely advocated by the country's foremost educators.

Although it may sound presumptuous to some, as an architect, I believe that no school should be planned today without providing space and facilities for these teaching "power tools" which the modern instructor must have in order to cope with the growing complexity of educational subject matter and the ever greater needs for clear classroom communication.

Terms vaguely used by many in the immediate past, such as "team teaching," "teacher specialists," "automatic teaching devices," etc., have now become realities — not as separate and distinct phases of the educational process but as an integrated function embracing the entire school plant.

Extensive research by our firm in this field of educational building development, aided by talks and advice from some outstanding educators, has resulted in finding practical constructive answers to the school architectural problems in designing schools to fit this newly applied teaching technique with its modern "power tools" — educational TV, language laboratories, etc.

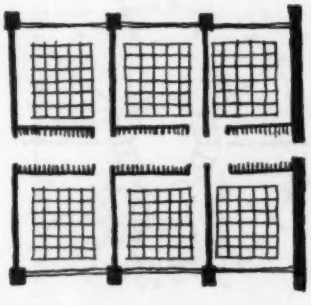
We are at the present planning a 2500-student high school in the Chicago area which includes provisions for the teaching "power tools" which the modern instructor most desires. These consist of automatic teaching devices


AS A DEVELOPMENT BEYOUD THE LECTURE, THE PRIMARY AID FOR LEARNING WAS THE BOOK.
AND TEACHING ALMOST ALWAYS OCCURRED IN CLASSROOMS FOR 30 STUDENTS –
THEN THE FILM AND THE PROJECTOR
ENCOURAGED VIEWING IN LARGE GROUPS –
AND OUR SCHOOL BUILDINGS WERE BUILT TO THESE NEEDS.
YESTERDAY
TOMORROW
NEW INSTRUCTIONAL AIDS AND TECHNIQUES HAVE BEEN DEVELOPING – FOR EXAMPLE: THE AUTOMATED TEACHING MACHINE...
PERHAPS SUCH LEARNING AIDS, PROPERLY EMPLOYED, CAN HELP FREE US FROM THE TYRANNY OF 30 –
AND FOCUS ATTENTION ON THE INDIVIDUAL STUDENT.
TELEVISION, TOO, MAY ENCOURAGE INDIVIDUAL STUDY.
Q-SPACE
ONE STUDENT'S STUDY CARREL
EXPECT NEW ATTENTION TO THE EDUCATION OF THE INDIVIDUAL
TO BALANCE THE EFFECTS OF MECHANIZATION AND BIGNESS.

At present most of our schools are designed as a modular "eggcrate" for a certain number of pupils to be put in a certain number of equal-sized compartments.

With promising practices in mind (team teaching, nongraded classes, etc.) we say that instead of an eggcrate school, we should have a school with different sized compartments — taking care of groups of 25 pupils as well as groups of 15 and 90.

Instead of having a nice modular eggcrate we now want to build an immodular eggcrate. We point with pride



to those few pioneer schools with complicated, immodular eggcrates instead of the nice, simple ones. Is this really progress?

Despite our big brave words about getting rid of the eggcrate, we are still building the darn things.

What we need is to decrate the teaching process. One very obvious way to do this is simply to remove the dividers. A better way is to scrap the scraps and start fresh with concepts instead.

Consider team teaching for a moment. What are the time-space requirements imposed by the team teaching program?

Any consideration of the problem of efficiently housing the team teaching technique throws into bold relief the need for new teaching area relationships and some grave inadequacies of the popular "train" type school. By "train" type is meant the traditional stringing of rectangular classrooms along a corridor, whether it be single or double loaded.

We undertook a research program last winter for a St. Louis County school system which posed this question: "What sort of school would develop in an objective solution of the needs in a team teaching situation?" A "hocker" was attached with the request that the school be also operable in the traditional manner if a retreat was found necessary to present techniques. We thought these factors to be dominant in developing the new school:

1. Proximity of teaching posts.
2. Great flexibility in converting classrooms to varying size elements, i.e., ability to convert two or three or possibly more classrooms into one large size room.
3. Grouping of mechanical services and aids, like TV, public-address systems, etc. These to be concentrated so that basic services for these elements might serve two or three classrooms and further that removal of dividing walls between classrooms would not disturb this base or core service.
4. That the solution be economical in use of space and cost of construction.

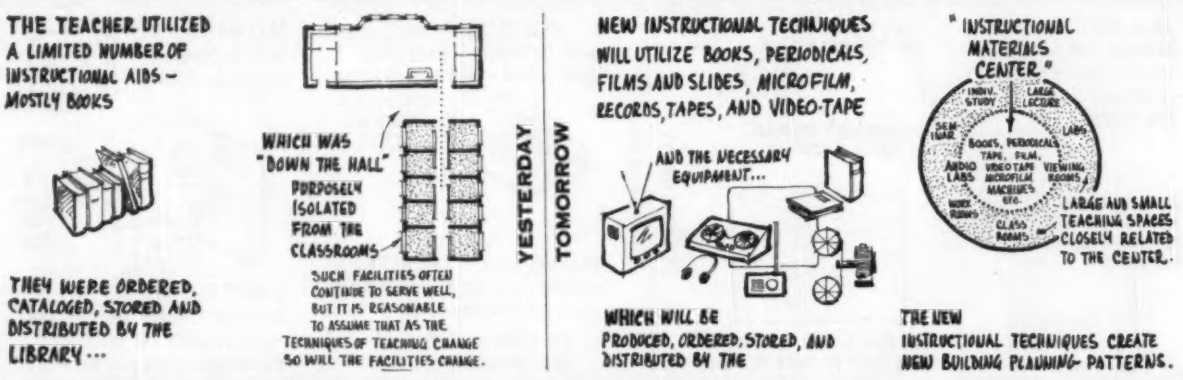
Examination of the "train" type plan revealed obvious failure to satisfy any of these criteria with the possible exception of number 4.

If we start with the thesis that the teaching situation is basically a triangular one — a teacher and a group of

tor a possible one seventh of the student body; ninth, tenth, eleventh, and twelfth grade foreign teaching laboratories; educational TV and audio-visual aids for lecture rooms (and for special classrooms); and a flexible system of classroom partitions based upon 16 foot modulars. Interchangability of classroom sizes are thus planned on a module basis so that the school administrators can vary their operational procedure as experience dictates necessary. These new features in planning an approach to machine teaching have been recommended by Dr. B. F. Skinner of Harvard University. A farsighted and co-operative board and superintendent have aided in this architectural endeavor taking place in one of the most important Chicago area schools.

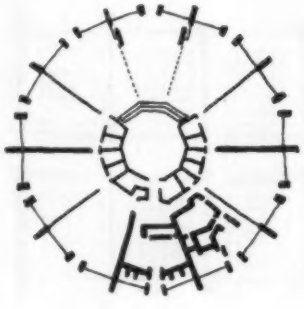
We sincerely believe that in our planning of this school, we are providing facilities whereby the learning process can be accelerated by 50 per cent. This contrasts with the typical school situation where investigation has shown that on the average the student is involved only eight minutes in a 40 minute class period.

Here is real economy in education, wherein the investment in the school plant, which costs but 15 per cent of the total education budget, affects a 50 per cent improvement in the over-all educational process. Since it is the 85 per cent cost of the school operating budget which is the vital thing, how much more effective it can be made to operate, is the question confronting all boards and educators, as well as architects. The new educational concept already indicates that a more perceptive student results from the maximum use of the modern aids or power tools — a student better educated to cope with


THE TEACHER UTILIZED A LIMITED NUMBER OF INSTRUCTIONAL AIDS – MOSTLY BOOKS
THEY WERE ORDERED, CATALOGED, STORED AND DISTRIBUTED BY THE LIBRARY...
WHICH WAS "DOWN THE HALL" PURPOSELY ISOLATED FROM THE CLASSROOMS
SUCH FACILITIES OFTEN CONTINUE TO SERVE WELL, BUT IT IS REASONABLE TO ASSUME THAT AS THE TECHNIQUES OF TEACHING CHANGE SO WILL THE FACILITIES CHANGE.
YESTERDAY
TOMORROW
NEW INSTRUCTIONAL TECHNIQUES WILL UTILIZE BOOKS, PERIODICALS, FILMS AND SLIDES, MICROFILM, RECORDS, TAPES, AND VIDEO-TAPE
AND THE NECESSARY EQUIPMENT...
WHICH WILL BE PRODUCED, ORDERED, STORED, AND DISTRIBUTED BY THE
"INSTRUCTIONAL MATERIALS CENTER"
INDIV. STUDY
LARGE LECTURE
SEM INAR
LABS
BOOKS, PERIODICALS TAPE, FILM, VIDEO TAPE MICROFILM MACHINES ETC.
AUDIO LABS
VIEWING ROOMS
WORK ROOMS
CLASS ROOMS
LARGE AND SMALL TEACHING SPACES CLOSELY RELATED TO THE CENTER.
THE NEW INSTRUCTIONAL TECHNIQUES CREATE NEW BUILDING PLANNING PATTERNS.

The expression "no cells and no bells" points toward these requirements. The facts are, however, that the best we are doing today falls short of these noble words. Our team teaching schools are full of cells. In schools with no bells the children move on the hour. It is a silent bell but still a bell.

This brings us to an educational-architectural concept. In a team teaching school (or putting it in much broader terms, in a school that teaches the individual regardless of whether it does it by a team of teachers or not) the uniqueness is that there will be a *continuous movement* of children. This is the key to planning space for almost any new kind of program based on individual need.



Continuous movement is one difference between teaching the class and teaching the individual — the "time" factor of the space requirements. No bells will be fact, not a fancy. Bells create surges of pupil movement. Surges require chutes through which these young people must be passed from cell to cell. Eliminate the surges and you eliminate the conventional chute-like halls. The concept of continuous movement may eliminate

students, it follows that since sight is a basic element in the situation, the teacher should face the group.

A recollection of some of the older classrooms brought forth a startling confirmation of use pattern as evidenced by the worn portions of the floor. The corners of the rectangular floor are almost the original surface while the triangle outlining the teachers area and the students desk area is worn thin. This has been maintained in the newer type rooms where work alcoves, sinks, or resource areas have been scattered around the room.

Having arrived at this conclusion we were immediately dismayed by such objections as: (1) tradition, or refusal on "bizarre" basis, (2) cost of construction, and (3) if this works, why hasn't it become popular?

The next turn then is to the loft-type building, the one presently advocated by most designers as providing large or small area more or less indiscriminately. Some of the flaws in this approach are:

1. It is the easy way out, not a straightforward development from the needs. In attempting to do all things it results in an amorphous structure which emphasizes its polyglot character with a shapeless bloblike exterior so reminiscent of the factories.

2. Permanent circulation lanes or corridors still have to be maintained so one ends up with a pattern only slightly more flexible than the "train."

3. It forces, "willy-nilly," the acceptance of a majority of the classrooms being windowless whether one likes it or not.

Turning back to the triangular classroom, therefore, meant that an economical framing system must be found and

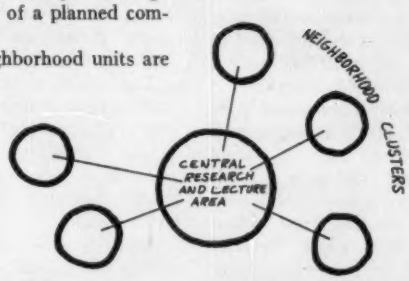
the problems of modern society.

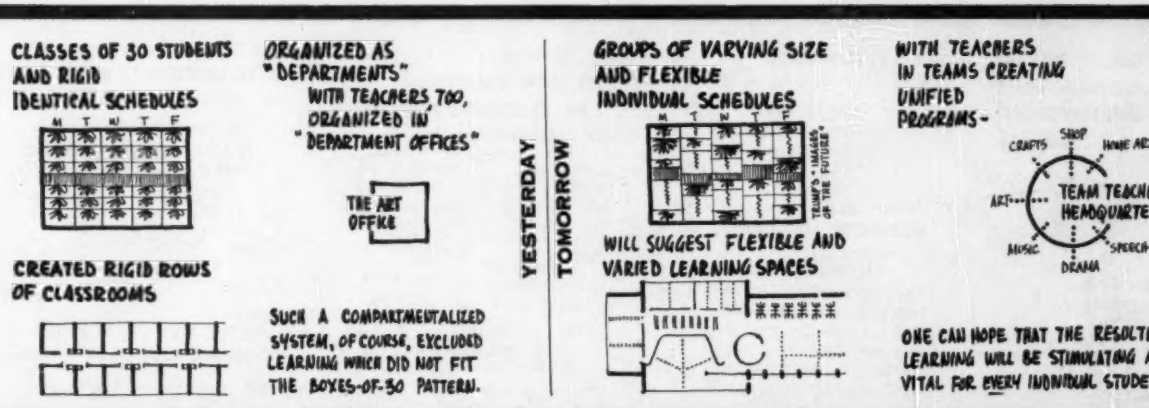
In our design concept for this new high school, these factors have been kept uppermost in mind:

1. Preception core units must be planned for effective use of electronic and mechanical aids with a well-designed plan for the extensive use of closed- and open-channel TV as an important aid in the teaching process.

2. Purely academic units of education must be planned as neighborhood educational preception core units, radiating from a community center made up of the technical, scientific, vocational cultural recreational, and administrative phases of the total educational plant. The corridors in this concept of design correspond to streets of a planned community.

These student neighborhood units are



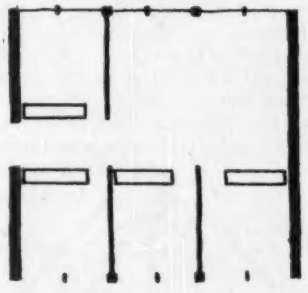

CLASSES OF 30 STUDENTS AND RIGID IDENTICAL SCHEDULES
M T W T F
CREATED RIGID ROWS OF CLASSROOMS
ORGANIZED AS "DEPARTMENTS" WITH TEACHERS, TOO, ORGANIZED IN "DEPARTMENT OFFICES"
THE ART OFFICE
SUCH A COMPARTMENTALIZED SYSTEM, OF COURSE, EXCLUDED LEARNING WHICH DID NOT FIT THE BOXES-OF-30 PATTERN.
YESTERDAY
TOMORROW
GROUPS OF VARYING SIZE AND FLEXIBLE INDIVIDUAL SCHEDULES
M T W T F
TRIMPS - "IMAGES OF THE FUTURE"
WILL SUGGEST FLEXIBLE AND VARIED LEARNING SPACES
WITH TEACHERS IN TEAMS CREATING UNIFIED PROGRAMS -
CRAFTS
SHOP
HOME ARTS
ART
TEAM TEACHERS' HEADQUARTERS
MUSIC
SPEECH
DRAMA
ONE CAN HOPE THAT THE RESULTING LEARNING WILL BE STIMULATING AND VITAL FOR EVERY INDIVIDUAL STUDENT.

the chutes.

Now we come to the concept of malleable space for teaching. This phrase, borrowed from Dr. Harold Gores, denotes the kind of space needed. Malleable means plastic or susceptible of being molded. Cells, modular or immodular, won't do. There may be occasions to change the characteristics of space to provide a few cells, but not many.

Time and space — continuous and malleable. These are the essences of planning for teaching the individual.

Malleable teaching space for continuous movement is nothing new. This is found in the typical self-contained classroom. There are no bells; yet children move continuously from one area to another. The group of 25 to 30 pupils is divided into many segments throughout the day to accommodate the most desirable grouping to best serve the needs of the individual pupils.

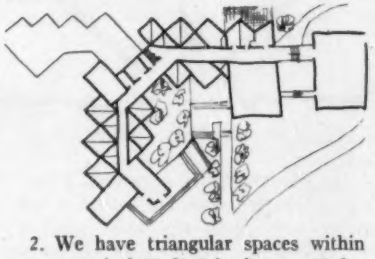


Then, if the self-contained classroom does a good job of offering malleable space for the continuous movement of 25 pupils, then why not have a self-contained classroom for 150, or 300, or 600? ■

that the triangular classroom must prove itself at least as efficient a space to teach in as the rectangular.

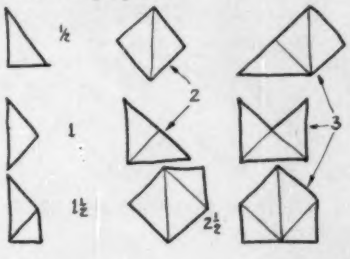
A study of the framing problem brought forth some interesting results, shown in diagrammatic form on the accompanying sketches:

1. By turning a series of basic units of 14 square bays at 45 degrees we can build an element which very neatly provides triangular spaces. By making the interior partitions light, movable types we can group them in varying shapes and sizes. The exterior walls and basic framing for the structure are all in the 90 degree relationship of the traditional pattern.



2. We have triangular spaces within an economical 18 ft.-3 in. bay or 36 ft.-6 in. column spacing, if desired.

3. The triangles are juxtaposed so that spaces are available in increments of one-half a basic classroom up to three whole units (or six halves) in shapes and areas very adaptable to classroom purposes.



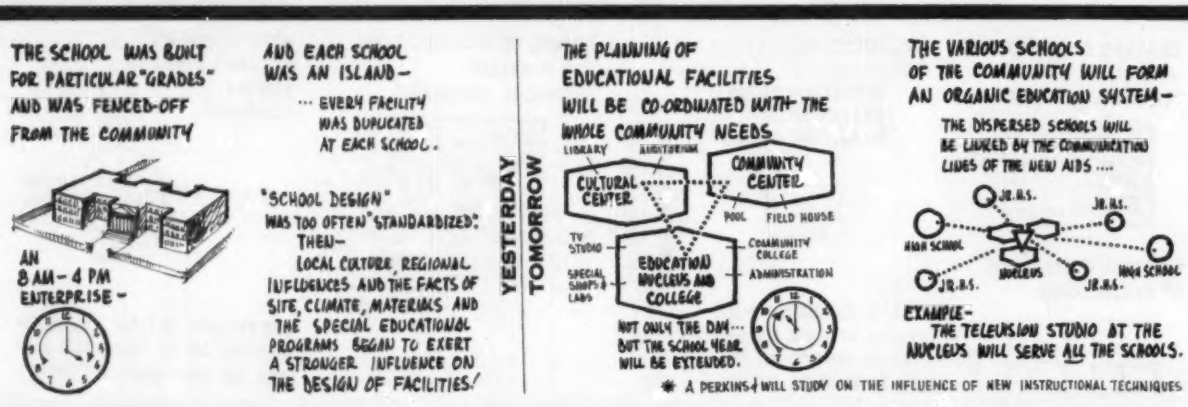
planned to accommodate gracefully any kind of classroom setup. It may be orthodox classes in amiable isolation, one from another; thoroughgoing core curriculum (projects integrating various subject matters), lone teacher or teacher teams, or any mixture of methods.

Neighborhood clusters are planned to surround a central study resource and lecture area of common use.

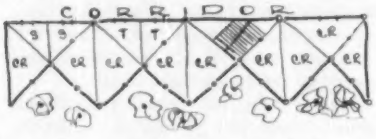
In general, space within a school building must be economically and efficiently planned for what is taught within it and "how" is will be taught. Educational facilities are no longer merely a "school building" and its surrounding grounds. The design approach must be from the standpoint of a *total educational community*, built upon a composite or integral campus plan of operation, all under one roof.

The practical, intermediate phase of architectural planning is to provide for the traditional pattern of the educational process, plus the new teaching concept, so that the transition can be made effortlessly and with a minimum of confusion.

As to facilities, the criterion is, don't skimp on space! Granted, space is precious and costly. But those planning should allow for adequate space for the present and certainly make adequate provisions for the future. Since, as we have said, the cost of buildings and their amortization is but 15 per cent of the total school budget, the aim should be to get the maximum educational results from the 85 per cent expenditure, while realizing that the cost of a building is measured in *pennies* instead of dollars in its relativity to the per square foot cost as compared to the actual life of a building. ■

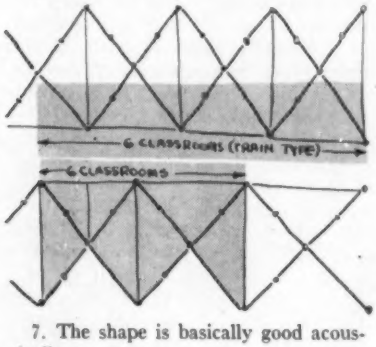

YESTERDAY
TOMORROW
THE SCHOOL WAS BUILT FOR PARTICULAR "GRADES" AND WAS FENCED-OFF FROM THE COMMUNITY
AN 8 AM - 4 PM ENTERPRISE -
AND EACH SCHOOL WAS AN ISLAND -
... EVERY FACILITY WAS DUPLICATED AT EACH SCHOOL.
"SCHOOL DESIGN" WAS TOO OFTEN "STANDARDIZED": THEN - LOCAL CULTURE, REGIONAL INFLUENCES AND THE FACTS OF SITE, CLIMATE, MATERIALS AND THE SPECIAL EDUCATIONAL PROGRAMS BEGAN TO EXERT A STRONGER INFLUENCE ON THE DESIGN OF FACILITIES.
THE PLANNING OF EDUCATIONAL FACILITIES WILL BE CO-ORDINATED WITH THE WHOLE COMMUNITY NEEDS
LIBRARY
AUDITORIUM
CULTURAL CENTER
COMMUNITY CENTER
POOL
FIELD HOUSE
TV STUDIO
SPECIAL SHOPS & LABS
EDUCATION NUCLEUS AND COLLEGE
COMMUNITY COLLEGE
ADMINISTRATION
NOT ONLY THE DAY ... BUT THE SCHOOL YEAR WILL BE EXTENDED.
THE VARIOUS SCHOOLS OF THE COMMUNITY WILL FORM AN ORGANIC EDUCATION SYSTEM -
THE DISPERSED SCHOOLS WILL BE LINKED BY THE COMMUNICATION LINES OF THE NEW AIDS ....
JR. H.S.
HIGH SCHOOL
NUCLEUS
EXAMPLE -
THE TELEVISION STUDIO AT THE NUCLEUS WILL SERVE ALL THE SCHOOLS.
* A PERKINS WILL STUDY ON THE INFLUENCE OF NEW INSTRUCTIONAL TECHNIQUES

4. Only one of every three classrooms need be interior. This can be reduced by using interior triangles for stairs, toilets, storage, or other ancillary spaces.



5. Less columns are required for equal number of classroom than in traditional "train" school.

6. Some 400 square feet less corridor is required for six triangular classrooms than for similar number of rectangular rooms.

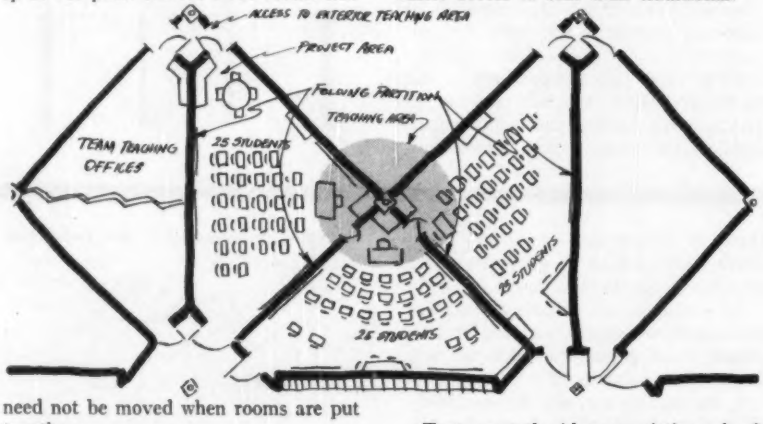


7. The shape is basically good acoustically.

8. More wall space for teaching surfaces is available than in same square foot area in rectangular room.

9. The teaching posts are within 15 feet of each other as against 60 feet in "train"-type school.

10. The electronic services brought up at one point service three rooms and need not be moved when rooms are put together.



11. Two triangular rooms make ideal size laboratory and one-half size triangles make good size team teaching offices and are well located. On other extreme, large assembly areas are available by removing corridor walls and spanning entire width of block.

12. Seating pattern flexible as evidenced by three different schemes. Patterns illustrated use conventional seat and desk designs. Even better space usage obtainable by using triangular seat and desk unit we designed which gives student more writing space and easier access to seat than traditional.

To try out the idea an existing school was transposed into this system. It effected a considerable saving in square feet of ground covered. Other secondary benefits are apparent if this system is studied but they cannot be enumerated in this relatively brief exposition. ■

A Definitive Experiment with Air Conditioning

Does air conditioning really improve the learning process is the question being answered by a definitive project of the Pinellas County, Fla., schools with two "identical" schools, one with and one without air conditioning. Here's a detailed progress report.

HENRY WRIGHT

Mr. Wright is an architectural consultant in New York.

Does temperature affect take-home learning? Is it a fact, as many believe, that the educational process slows down as the mercury goes up? Can air conditioning pay for itself in schools as it does in commercial and industrial buildings?

The Pinellas County, Florida, board of public instruction intends to find out. With a grant of $58,800 from the U. S. Office of Education for an ambitious three-year study, it has a good chance of doing so. Indeed, Pinellas County is in a unique position to conduct a study of the cost and effects of school air conditioning.

The Pinellas County school system which serves the rapidly-expanding St. Petersburg-Clearwater industrial area, has been growing by leaps and bounds. In 1959, faced by a need for two new junior high schools, the board saw an opportunity to make an unusual "one to one" experiment: to build two schools of identical capacity, one with air conditioning and one without. At the same time, in conjunction with the Florida State Board of Public Instruction, the Pinellas Board took the first steps toward obtaining a research grant under the National Defense Education Act to study results in the new schools.

First Since World War I

The non-air-conditioned school, known as the Pinellas Park Junior High School, is already in operation. The air-conditioned Oak Grove Junior High School will open for the coming term. A contract has been concluded covering the projected research. The study will be the first scientific attempt to evaulate the influence of the thermal environment on education since the classic investigations of the New York State Commission on Ventilation prior to World War I.

The research will embrace both an eight-week summer session and a regular school year. It will apply the same criteria to the air-conditioned and non-air-conditioned buildings and to the two school populations in an effort to determine:

1. Whether there is a significant difference in the cost of operation of air-conditioned and non-air-conditioned school buildings.
2. Whether a significant difference in educational achievement results from differences in thermal environment.
3. Whether improved climate control produces significant differences in the incidence of illness and psychological problems.

Teacher teams are already at work co-ordinating their instructional programs for the two schools, but educational experimentation will not begin until the 1961 summer session — to allow an initial "shake-down" period in operation of the new buildings. The regular school year to be studied will be 1961–62. With analysis of results expected to take a full year, the final report on the research will be made available in late 1963.

Building Cost

Meanwhile, an earlier objective of the Pinellas County experiment has already been attained. By building two schools to meet identical educational

programs, the board has determined — to quote Superintendent Floyd T. Christian — that "there need be no significant cost difference between schools with air conditioning and those without it." With the co-operation of State Superintendent Thomas D. Bailey and of Dr. C. W. McGuffey, Florida's director of school plant administration, various regulations were waived for the air-conditioned school. This was done in recognition of the fact that state standards have been based on a need for lavish breeze-cooling that would not apply in an air-conditioned building, whereas the permitted changes might produce construction-cost savings sufficient to cover the cost of air-conditioning equipment.

The non-air-conditioned school, used as a basis of comparison, was designed by Architect Charles L. Colwell, A.I.A. It has an attractive campus-type layout and fulfills all regular Florida requirements. The air-conditioned school, designed by Architects Bruce & Parrish, with the writer as consultant, has lower ceilings, considerably fewer windows and a more compact general arrangement. Some skepticism was expressed in local papers as to whether these economies could offset the cost of air conditioning. But when bids were opened for the Oak Grove School, complete with air-conditioning unit ventilators providing year-'round automatically controlled heating, cooling, and ventilation, the cost was found to be just under that for the non-air-conditioned school: $594,200 as compared with $594,761.

A few months later — the pace of Florida school expansion being what it is — bids were taken on eight-classroom additions to each of the schools. When the figure on the addition to the air-conditioned school came in, it was a whopping $15,908 less than that for the non-air-conditioned addition: $80,682 as compared with $96,029 — or almost $2,000 less per classroom!

While this seems to be conclusive evidence in favor of air conditioning, some members of the board and school administration still question whether the sacrifice of open planning which accounts for the savings in the air-conditioned school represents a net gain overall. One of the great advantages of the method employed in the Pinellas' experiment is that the entire populations of the two schools, along with others who are interested, will be able to judge this for themselves.

Operating Expense

While every effort has been made to keep the quality of materials in both bulidings as uniform as possible, any significant differences that may have crept in will presuably be revealed by the first part of the research program, concerned with differences in maintenance costs. This part of the study is described in the research contract as follows:

> The variables relating to the physical plant will be related to man-hours-of-use. Custodial services, both in basic tasks and minor maintenance services, will be expressed in cost figures. Maintenance services performed by specialized personnel will also be so expressed. After these have been adjusted in terms of man-hours-of-use, the difference between the costs of the several classes of service in the climate controlled and in the non-climate controlled building will be determined. Both buildings will meet the same standards of cleanliness, appearance and repair.
>
> Of particular interest will be the differences between the two buildings in such matters as the incidence of pest and mold damage and the deterioration of paint. Damage to books and equipment as well as to the buildings will be taken into account.

Any savings from the above factors will naturally be related to the operating cost of the air-conditioning equipment. In the climate ot the Tampa Bay area, this cost is likely to be fairly high even during the regular school year — certainly well above the national average. On the other hand, the cost of salary items like custodial services is likely to be large, compared to that of air-conditioning operation. Healy & Latimer, the consulting engineers who designed the mechanical systems for both schools, have been retained to supervise the accumulation of data and interpretation of results bearing on this comparison.

Allowance for differences in the extra-curricular use of the schools, which may result from the availability of air conditioning, will be taken care of by the "man-hours-of-use" criterion in the research plan. On the other hand, differences in *income producing* extra-curricular use of the buildings may be regarded as having a true bearing on the cost of operation of air conditioning, taking income as well as expenses into account.

Summer Session Program

The evaluation of educational results will begin with an eight-week session this summer. This part of the study will be particularly significant because of the great differences in thermal conditions — in air-conditioned and non-air-conditioned spaces — during July and August, and also because the school populations and curricula can be more fully adjusted to research requirements than during the regular school year. As described in the research proposal:

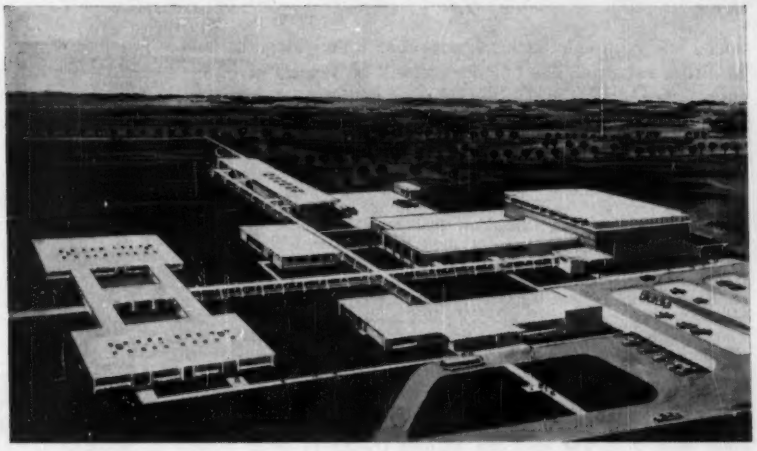
> Populations of approximately 300 students each will be recruited from all over the county. [Pinellas County has a summer enrollment of almost 30,000.] Data on the sex, school learning potential, previous school achievement, and socioeconomic levels of the students in both the experimental and control schools will be collected. In subsequent analyses differences between the two groups will be held constant by statistical means. It is possible that sub-samples may be drawn for study of certain problems.
>
> The courses offered in the experimental and control schools will be the same, as will be the social and recreational programs. Insofar as possible, faculties will be selected which are comparable in training, experience, and effectiveness as evaluated by supervisors.
>
> In comparing final achievement, the learning taking place in the experimental and control groups will be evaluated with specially-designed instruments known to be highly valid in terms of the content of instruction. The teachers in both experimental and control schools will be involved in determining course content and building item pools. The final work of putting together the tests and validating them will be done by competently trained personnel presently employed in the county school system.
>
> The significance of any differences found in educational achievement will be determined both statistically and practically. Simple "t" tests of significance of differences of means on the criterion tests will be used, and in addition analysis of variance and/or covariance will be employed if initial studies seem to indicate the desirability of this more complex approach.

The summer session is expected to provide the best basis for evaluating such subtle elements as student satisfaction and morale. Records will be kept based on the students' own appraisals of the effectiveness of the program, on absences and their causes, drop-outs, etc.

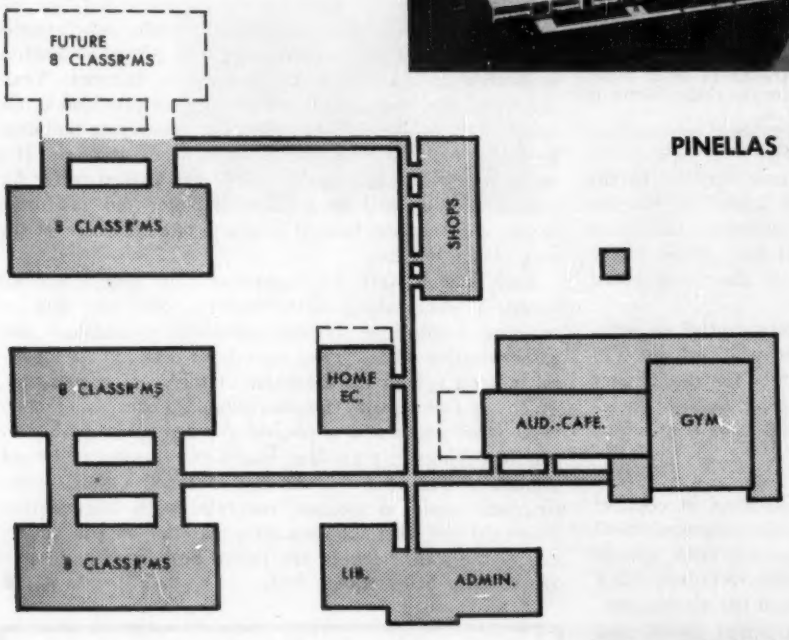
Educational Achievement — Regular School Year

Even more important than the study of the summer session will be that of educational achievement during the regular school year. This part will be more difficult, however, since there will be less opportunity to equate the school populations, faculties, and curricula. Also, differences in thermal conditions will be less pronounced in the spring and fall — and in mid-winter, sometimes nonexistent.

This part of the study is to cover regularly enrolled students in grades seven, eight and nine in two groups of the same size, including children from a wide range of

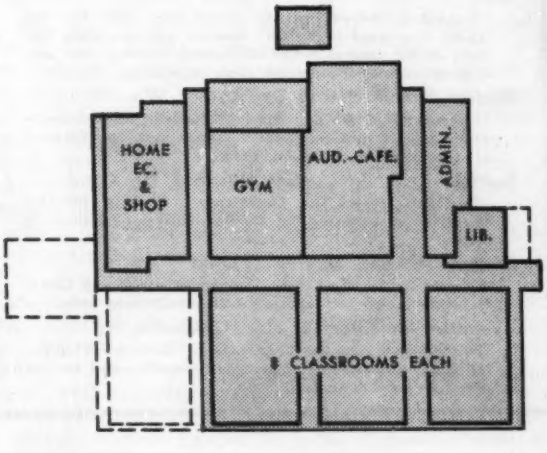


PINELLAS PARK JUNIOR HIGH SCHOOL



The non-air-conditioned school, Pinellas Park, which was designed by architect Charles L. Colwell, has a dispersed layout with covered connecting walks.

OAK GROVE JUNIOR HIGH SCHOOL



The air-conditioned school, Oak Grove, designed by architects Bruce & Parrish, has classrooms blocked together, facing open corridors with dome skylights.

social and economic backgrounds — with no concentrations at either extreme. The curriculum will be typical of junior high schools in the United States. Differences between the two groups will be held constant by statistical means and samples will be drawn as needed for certain aspects of the study.

> Comparisons . . . will be limited to four basic subject matter areas: namely, English (including reading), science, mathematics, and social studies. The basis for these comparisons will be scores on the criterion tests constructed specifically for the purpose. These tests may contain substantial portions of the content constructed in Experiment B [the summer-session study], but will not be identical. The determination of content will rest largely on the need for highly valid measures of specific outcomes of instruction in the control and experimental schools. A representative group of teachers will be asked to review items, but will have no responsibility for the construction of final forms. . . . These instruments will differ from standardized tests in that they will contain little or no material which has not been presented at the particular grade level. . . . The tests will be long enough to be of better than average reliability, in order to minimize the chance factor in subsequent comparisons. . . .
>
> The test will be administered by trained guidance personnel and scored under the direction of the Co-ordinator of Testing.

Similar statistical techniques to those applied to the results of the summer session will be used. The Pinellas County school administration has automatic tabulating equipment for such purposes, and will have access to the even more comprehensive resources of the state board of public instruction at Tallahassee.

Investigation of the effects of climate control on scholastic factors other than achievement will include: (1) records of health factors; (2) referrals for disciplinary purposes; (3) exceptional child care referrals; (4) measurement of the student-faculty morale.

Thermal Environment Instrumentation

To provide a valid basis for comparisons in comfort conditions, the suppliers of the air-conditioning equipment for the air-conditioned school will provide both schools with a number of temperature-humidity recorders. Each recorder will make a continuous record of the air temperature and relative humidity at a particular point, and record-charts will be replaced daily by school personnel. These records will then be analyzed to determine the average condition for each class period expressed in terms of the U. S. Weather Bureau Temperature-Humidity Index (T.H.I.). This will result in a series of paired numbers for the two schools, which can be reduced to a single figure representing the difference in the T.H.I.

Preliminary analysis of Weather Bureau records for the Tampa Bay area indicates that during school hours and the regular school year, the outdoor T.H.I. is likely to be in the 75–79 "hot" and 80-and-over "very hot" categories about 40 per cent of the time. Typically, all of the "very hot" and more than half of the "hot" weather occurs during the first and last marking periods, so that differences in educational achievement, if they are found to exist, should be greatest at the beginning and end of the school year.

As a result of this instrumentation, the experiment will also provide a detailed, objective check on the effectiveness of the breeze ventilation so popular in Florida schools, and of window ventilation versus thermostatically controlled mechanical ventilation in wintertime.

Contrasting Climate Control Systems

The methods for maintaining thermal comfort differ markedly between the two schools. The non-air-conditioned Pinellas Park Junior High School, in accordance with regular Florida practice, provides for lavish breeze ventilation — each classroom having either two "window walls" or a wall of windows plus a large-capacity exhaust fan. Classroom heating is by gas-fired, residential furnaces located in masonry enclosures between pairs of rooms, with access doors to the outside. There is no provision for mechanical ventilation in cold weather. Heat for the gymnasium, cafeteria, library, etc. is provided from a hot-water boiler.

The air-conditioned Oak Grove Junior High School is equipped with air-conditioning unit ventilators located on the inside walls of the classrooms and drawing outdoor air through a continuous pipe-and-air space between adjoining rooms. The unit ventilators provide automatically controlled winter ventilation, along with hot-water heating in winter and chilled-water cooling in summer. Year-'round heating, ventilation and cooling are provided in the auditorium, cafeteria, library, and administration buildings by large-capacity and multizone air conditioners. Hot water for heating the entire school and chilled water for cooling are supplied by a gas-fired boiler and gas-fueled engine compressors, located in a separate structure at the rear of the building.

Both schools have 20 classrooms, four general science rooms, a homemaking suite, drafting room and shop, a teaching auditorium, library, cafeteria, gymnasium and administrative offices. They were built with almost identical materials, with the exception of the roof construction, which, at Oak Grove (air conditioned), consists of open truss steel joints and a poured gypsum deck, with suspended ceilings of glass-fiber board carrying mineral wool insulation. The roof construction at Pinellas Park (non-air-conditioned) is precast concrete, with combination acoustical and thermal insulating material on the underside of the slabs between the joists. Both were built at a cost close to $10 a square foot. ■

WHERE TO GET MORE DATA ON AIR CONDITIONING

Lennox Industries, Inc., 200 S. 12th Ave., Marshalltown, Iowa
"A New Concept of Classroom Heating, Ventilating, and Cooling." Sixteen-page booklet on the theory of schoolroom heating and air conditioning and how Lennox "comfort curtain" equipment operates.

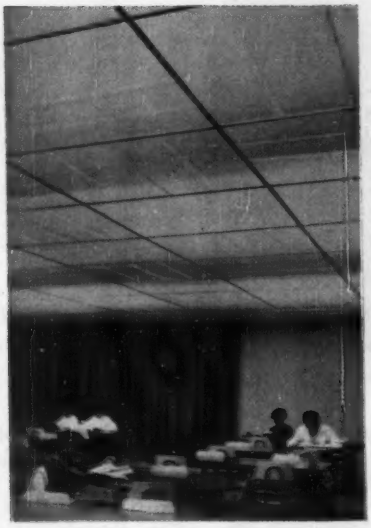
Janitrol Heating & Air Conditioning, Columbus 16, Ohio
"Janitrol Draft-Free Perimeter Distributors" (AIA File No. 30-A). Four-page folder with features and operating features of the Janitrol forced-air heating, cooling, and ventilating systems for individual room installation.

Modine Manufacturing Co., Racine, Wis.
"Summer-Winter Air Conditioning" (Bulletin 757). Sixteen-page booklet with principles, features, and specifications of modern system of air conditioning.

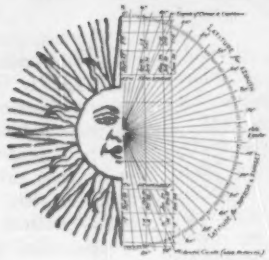
Dunham-Bush, Inc., West Hartford 10, Conn.
"CR Year 'Round Air Conditioners" (Bulletin 6014A). Twenty-page catalogue of Dunham-Bush air-conditioning system.

Chrysler Airtemp, Dayton 1, Ohio
"Climate by Chrysler." Four-page leaflet explaining Chrysler water-cooled and air-cooled air-conditioning units.

American Air Filter Co., Inc., Louisville, Ky.
"Fact Kit on School Air Conditioning." Extensive 11-piece collection of literature on the need, benefits, and cost of school air conditioning.



Mountlake Terrace High School, Ralph Burchard, architect.



Progress in School Lighting

FRANCIS C. DARBY

Mr. Darby is assistant superintendent, business services department of education, San Diego County, San Diego, California.

The development of school lighting has gone through several identifiable stages. The first such stage might be referred to as the "foot-candle standards era." If we look far enough back into state codes and state department of education standards, we will see that there were required amounts of glass area in proportion to the floor area. But this strictly quantitative approach set no standards as to where the glass should be provided. Among the vestiges of this era one can find, in some of our now obsolete school buildings, low windows with chalkboard mounted in between. It was impossible, of course, for anyone except the pupil writing on the chalkboard to see anything being written in such an area.

At the beginning of this period the standards called for five to ten foot-candles of light at the desk tops. As the foot-candle requirements moved up from 10 to 15, and then 20, a great deal of emphasis was placed on the quality of light. Quality at this time meant north light, and in order to boost the foot-candles, the north windows were enlarged until they frequently became solid banks of glass. Efforts were made to provide bilateral lighting so as to eliminate the problems of shadows, and even trilateral lighting schemes were developed. Many of these buildings achieved the result of having well-distributed light and enough foot-candles on the working surfaces — along with eye-straining glare.

Next we have an era of experimentation, research, and a definition of the needs and criteria for good school lighting. Publication of the criteria became widespread in 1947; further research has helped refine methods in achieving these criteria. Apparently many architects and school people went through a frustrating period trying to meet the new criteria with buildings which had been designed for an earlier period. As a result you see many schools with huge glassed areas that are then covered with overhangs, louvers, venetian blinds, or roller shades. In some areas of the country glass block was substituted for the upper sections of windows. Attempts were made to utilize skylights and other means of bringing in daylight and then using elaborate methods to limit and control the daylight.

The third era of new products and methods was brought about by the influence of audio-visual teaching devices, the development of air conditioning of teaching spaces, the development of new lighting fixtures, and the educational demands for controlled space and flexible space. These changes brought new demands on the architect and the school planner and, at the same time, provided the tools to solve the problems. The need to darken the teaching space for certain audio-visual devices raised questions as to whether or not daylighting through large glass areas was most economical, particularly when fluorescent lighting fixtures had developed to a point where fixtures could meet all of the lighting requirements. If classrooms were air-conditioned it meant that the problem of darkening a room and still maintaining air circulation had been solved. If the environmental factors of lighting, heating, and ventilation could be solved, then the teaching spaces became much more flexible. Examples of good solutions began to appear in place of the adaptation of old forms to new uses.

Present Status

Where are we now in the design of good lighting for schools? First of all,

(*Concluded on page 45*)

Can Portable Classrooms Help Your

The portable classroom offers temporary relief to a district's shifting enrollment situation. Here is a review of how three school sysems have used them as a guide to the possibilities they offer you.

The long-standing tradition that has "seen the children off to school each morning" is witnessing an about-face as school returns the favor by coming to the children. This development deserves a paean of praise for thinking minds that have provided a temporary means of relief for the migrating population problem in education.

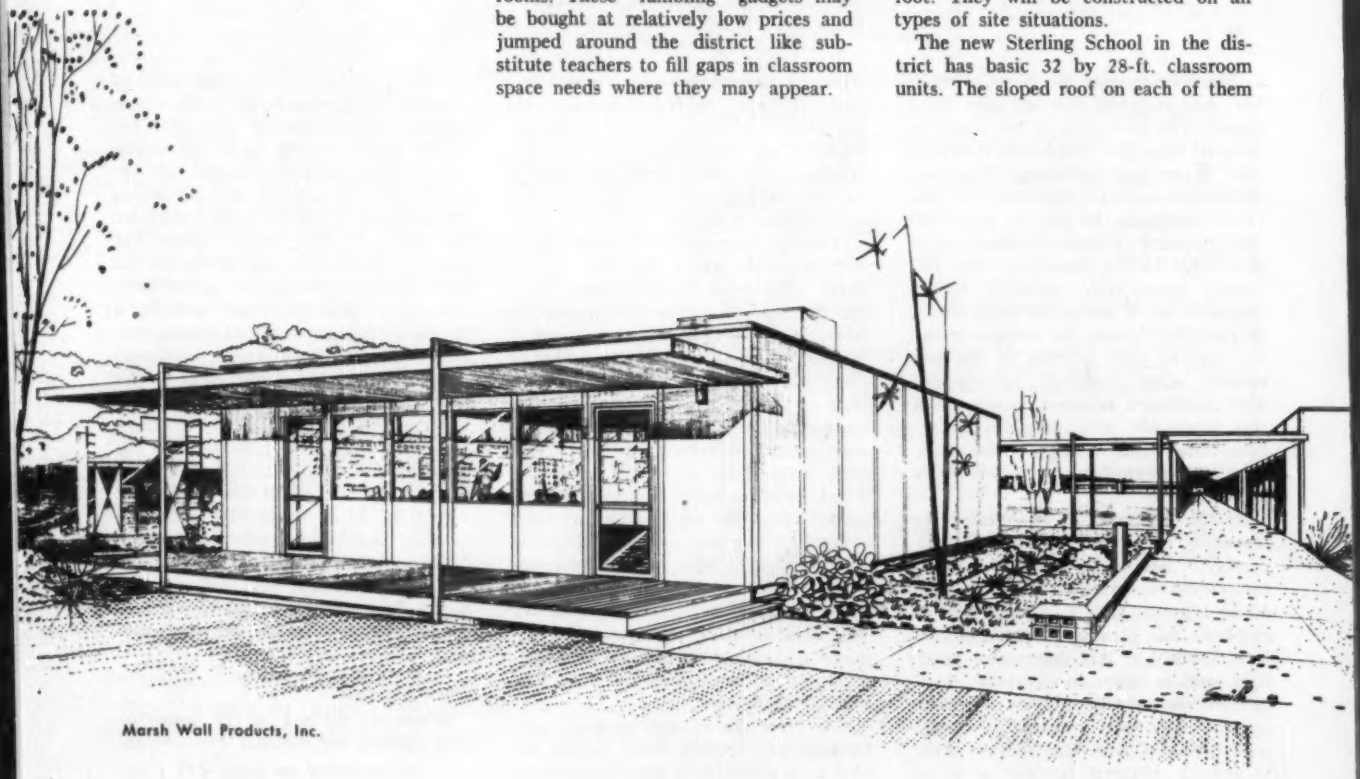
Substantial population shifts from older urban sections to new suburban developments has formed an increasing enigma for school boards, since the migrating families are mostly young couples with children that are not only certain to grow up but also to increase in number.

The wonder drug? Portable classrooms. These "rambling" gadgets may be bought at relatively low prices and jumped around the district like substitute teachers to fill gaps in classroom space needs where they may appear.

The Sterling School

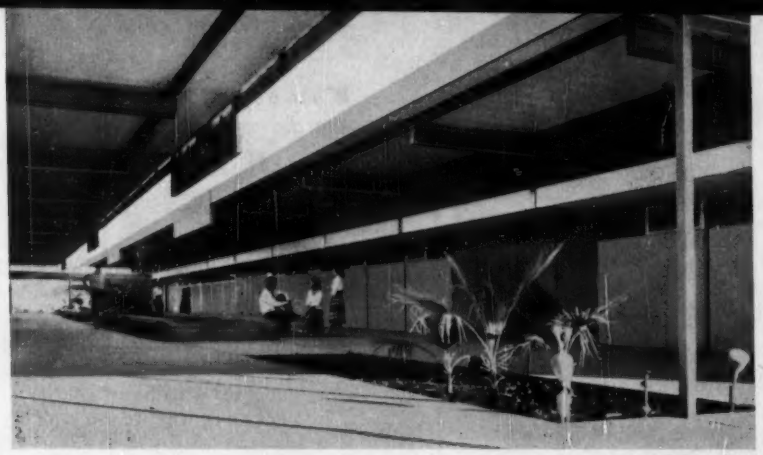
Among many areas in the country that are profiting from the portable classroom is the San Bernardino, Calif., City Schools. This district suffered from a city-suburban migration that called for more school facilities in the newer areas than could be provided. It was decided to build schools that would simply follow the children around as their families moved away from the older parts of the city. C. K. Allen, staff architect for the district, decided on quickly constructible all-steel units, the first of which was built in 1956. During 1960, San Bernardino will build 11 steel classrooms, at an average cost of $12 per square foot. They will be constructed on all types of site situations.

The new Sterling School in the district has basic 32 by 28-ft. classroom units. The sloped roof on each of them



Marsh Wall Products, Inc.

District?



— Calcor Corp.

has a 12-ft. overhang along one side, providing a sunshade for the windows. The completed building is incombustible except for its contents.

The Castro District

The Castro Valley, Calif., School District has been aided by steel-framed portable classrooms built on a modular design and containing all necessary educational equipment. The Vallejo, Calif., architectural firm of Lillis & Smith designed a unit that is created from component parts on a mass-production basis to cut costs.

Stressing both portability and efficiency, the architects have designed a standard 30 by 32-ft. classroom with steel framing to support the roof and wall panels. Washable Marlite wall panels in a handsome wood grain are used on the interior wall components, while the exterior is aluminum sheathing. The floors, walls, and ceilings are insulated.

Heating and cooling are provided by an electric heat pump. Fluorescent lighting tubes are spaced at regular intervals between the acoustical ceiling panels.

The building rests on small concrete pads. It divides into two 15 by 32-ft. sections for easy moving.

Classroom equipment provided with the portable unit includes a sink cabinet, work counter, poster case, teacher's storage case, bookcase, coat-hanging cabinet, 44 ft. of lineal chalkboard, 24 lineal feet of tack board, darkening drapes, loud-speakers, and a fire extinguisher.

Clark Elementary School

A portable aluminum classroom unit has been built in the Gregory-Portland Independent School District in San Patricio County, Tex. In addition to low construction costs, the Clark Elementary School has a low-maintenance exterior that should eliminate most upkeep expenses.

The two-classroom unit costs about $11,800, or $6.55 per square foot. It measures about 60 by 27 ft., with additional space in a covered walkway. The building's two classrooms combined will accommodate from 64 to 80 pupils.

The unit was built with Reynolds Aluminum. The use of aluminum structural wall panels enabled the school architect to design an economical, maintenance-easy building shell which incorporated the exterior appearance and interior appointments preferred by the school board.

The building rests on concrete piers and can be transferred to another location by ordinary moving equipment, or it can be made permanent. It has an expected life in excess of 50 years without any protective maintenance.

The school's two portable classrooms have different interior finishes: one in mahogany, the other a combination. One wall of each classroom contains floor-level louvres for additional ventilation. The use of reflective aluminum plus air space gives adequate ceiling and wall insulation in the Corpus Christi area, but additional insulation could easily be provided in other climates. ■

— Usry, Inc.

— Butler Manufacturing Co.

Interior of two typical portable classroom structures.

What do bond ratings mean? What data is considered when they are determined? What happens when defaults occur? Here is a basic explanation of how bonds are rated and what this rating means to your schools.

What Do Bond Ratings Mean?

WALTER H. TYLER

Mr. Tyler is manager of the municipal bond department of Standard & Poor's Corporation in New York.

The business of rating municipal bonds is not an exact science. We simply try to express, in symbolic terms, the opinion of our committee as to the odds against trouble to the investor in any particular security.

I do not know why we use symbols. It would have been just as easy, and probably more revealing, to have quoted these odds in bookmaker fashion — that is 10 to 1 or 5 to 1. We might have used percentages, or we could have used a numerical index of some sort. The "market ratings" which are the basis of our pricing service range from zero to 40 and permit an exact classification.

Perhaps the pioneers in the field elected to use the symbol approach because of some quirk in the laws of libel, or simply because they did not want to be pinned down quite so tightly. Whatever the reason, credit rating symbols of one sort or another have been in use for more than a century.

Each rating agency has its own symbols, but all follow the same general pattern. I suspect that all started with four categories, "A," "B," "C," and "D." Naturally, any prospective borrower with bonds not actually in default regarded his securities as worth an "A," or at least a high "B." Since there were relatively few defaults, the agencies quickly found themselves with 90 per cent or more of rated securities in the top categories. Obviously, if the ratings were to have any meaning, finer gradations were required.

Each agency has its own variation of the basic theme. Fitch classifies bonds from the top down as AAA, AA, A, BBB, BB, etc. Moody uses the symbols as Aaa, Aa, A, Baa, Ba, etc. We at Standard & Poor's express ours in terms as A1+, A1, A, B1+, B1, etc.

We use 12 rating categories, but the six lowest are reserved for highly speculative situations or for situations actually in default, and these are quite rare today in the municipal field. The bulk of state and municipal issues falls in one of the first four categories.

While the opinions of the agencies may differ substantially as to specific issues, the over-all patterns are quite similar. The last comparison to come to my attention indicates that 4.5 per cent of Fitch's municipal ratings, 3.1 per cent of Moody's municipal ratings, and 3.4 per cent of Standard's municipal ratings fell in the first group. Comparable percentages in the second group were 21.5, 20.9 and 18.4 per cent — in the third group, 42.4, 46.6 and 44.4 per cent, and in the fourth group 27.8, 25.4 and 31.0 per cent. Only 3.8 per cent of Fitch's 4.0 per cent of Moody's, and 2.8 per cent of Standard's municipal ratings were in the fifth or lower categories.

What Symbols Mean

Just what do the symbols mean? Standard & Poor's regard "A1+" issues as prime quality — equal in every respect to U. S. Government bonds. "A1" issues are high-grade securities which just miss the prime classification for one reason or another. It may be that the ratios are a trifle higher, the communities are somewhat smaller, or the economy not quite as well balanced. "A" rated issues are upper medium grade. Their market pattern will still be dominated by the over-all level of interest rates, but the market itself will be somewhat more volatile — particularly in periods of economic stress.

The "B1+" group consists of medium grade bonds which should be paid under any foreseeable economic conditions. Investment characteristics still predominate but market swings are likely to be wide.

Ratings of "B1" or "B" are substandard. Bonds in this group will be paid under favorable economic conditions, but payment may be in jeopardy in periods of depression. The various "C" and "D" ratings represent defaults or near defaults and reflect the prospects of recovery.

How Losses Occur

Ratings, as stated, express odds against losses which can occur in two ways — through default (failure to pay principal and interest promptly when due) or through a market performance substantially poorer than that of other fixed income securities.

RATING	5 YEAR MATURITIES			10 YEAR MATURITIES			20 YEAR MATURITIES		
	JULY	AUG.	SEPT.	JULY	AUG.	SEPT.	JULY	AUG.	SEPT.
Aaa	2.57	2.20	2.25	2.88	2.60	2.75	3.15	2.95	3.10
Aa	2.70	2.30	2.30	3.00	2.80	2.80	3.40	3.15	3.30
A	3.00	2.55	2.60	3.45	3.25	3.10	3.75	3.50	3.60
Baa	3.30	2.90	2.88	3.75	3.40	3.38	4.00	3.80	3.83
Avg.	2.89	2.49	2.51	3.27	3.01	3.01	3.58	3.35	3.46

What do municipal bond ratings mean in rates of interest on your school bonds? The above IBA report indicates the various yields by bond ratings and length of maturities in recent months.

The ratings endeavor to reflect both possibilities.

Fortunately, municipal defaults are quite rare. Even in the troublesome period from 1930 through 1938 there were only 731 defaults of 90 days or longer involving $1,624 million — or about 10 per cent of the bonds outstanding. Of these, 416 for a total of $1,061 million were settled more or less promptly without reduction in principal or interest.

Since World War II, major defaults have been limited to a handful of tool-road revenue issues and a few, very obscure communities. On the other hand, losses resulting from poor market performance were, and still are, all too common. To the banker who must raise cash, there is very little difference between an actual default and a 40 per cent loss. Of course, we are not concerned with losses resulting from changes in the over-all interest rate pattern, but simply with those where the cause is credit deterioration.

Credit may deteriorate in many ways and the relative importance of any factor can show infinite variations. Obviously, any mechanistic approach is doomed to failure. The only realistic method, in our opinion, proceeds from a careful study by an experienced analyst of all available information and ends when a veteran committee, after reviewing the analyst's report, reaches substantial agreement.

Operational Method

Our operation is really very simple. We divide the country up into areas which have something common — the Northeast, the Southeast, the Midwest farm states, etc. and assign each area to an analyst.

The analyst must know something of the laws, history, and background of his area, and must be conversant with its economy and prospects. He collects information on any bond being offered in his area, and follows up any issue on which we have a rating. In the event of a new issue, or if he feels that there is a fundamental change in a situation, he drafts a brief memorandum summarizing the salient points.

This memorandum forms the basis for our committee discussion. The analyst, of course, is a member of this committee.

We also invite anyone else who may have a contribution to make. For example, we might include the steel analyst, in the case of a Pittsburgh suburb; the chemical analyst if we are discussing Midland, Michigan; a utility analyst in the case of a revenue bond; or we may check with our field man or sales representative for a physical impression of an area.

Ours is a large organization, filled with trained observers, and it would be hard to find a section of the United States into which someone does not find his way.

Any information which the analyst regards as important will figure in the memorandum which he submits to the rating committee. In addition to the analyst and such outside experts who may be invited to participate, a typical committee will include myself, as department head, and one or more of senior analysts, as well as a veteran member of our investment counsel staff. An average committee will boast an aggregate of 60 or 70 years experience, and will have been through every sort of difficulty an investor can encounter.

Using the analyst's memorandum as a base, we simply discuss the situation until we reach substantial agreement as to the proper classification. Frequently, such agreement is reached in minutes, but in some cases we have devoted hours, or even days, to discussion. Once in a while, we find it impossible to reach any understanding, and the answer must be "no rating."

Information Considered

What sort of information do we consider? Literally, anything which gives us a clearer picture of the situation.

The economy of the community is of major importance. We want to know who lives there, why, how they make a living, and how long they will continue to do so. While this will vary considerably, I would say that, on average, economic considerations will make up about 40 per cent of a rating. Most people will pay their bills if they can, and economic news makes the papers with the greatest market impact.

We also want to know something of the debt-paying habits of a community. Some folks pay up, even when it hurts. Others are habitually on the lookout for a way to beat a creditor, and this is equally true of communities. Historical factors of one sort or another will make up another 25 per cent of the rating.

(*Concluded on page 47*)

How to Care for New School Floors

DAVE E. SMALLEY

Mr. Smally is a technical adviser on floor care and building maintenance, Brazil, Ind.

Although what we have to tell you in the following paragraphs may not be altogether new to you, we do know from experience that too often floor maintenance becomes a fixed routine which can deteriorate through laxity and the natural tedium of the job. Then, too, new methods and new products are constantly being developed, and to be efficient in any kind of work we should keep up to date.

First, because they do prevail in most new school buildings, let us consider the proper care of the resilient floors. These floors, or perhaps more correctly called "floorings," consist of the following: asphalt tile, vinyl tile and vinyl sheet, rubber tile, linoleum and cork, the latter usually in tile form.

Asphalt Tile

Asphalt tile is the least expensive of the good resilient floors; from the standpoint of appearance it is generally the most difficult to maintain. However, great improvements are being made in this type of flooring. While it is quite resistant to soiling, it responds less readily to cleaning, especially to mopping. Any of the regular cleaners may be used on asphalt tile, though strong alkalies should be avoided on any resilient floor. While mild alkaline cleaners are not necessarily injurious to asphalt tile, in solution they may seep down between the tiles and loosen them from the subfloor.

Usually neutral soaps and synthetic detergents serve satisfactorily for cleaning asphalt tile. We believe the synthetic detergents are preferable because they leave no residue of their own and require less rinsing than soap cleaners. Unless a soapy solution is well rinsed, the residual film hastens resoiling and can even make the floor slippery.

With the exception of alcohol, practically all of the common solvents dissolve asphalt tile. This includes naphtha, gasoline, turpentine, oils, etc. Although the asphalt tile being made today is more resistant to these solvents than the older tile, even a new floor should not be subjected to them. This means that oily dust mops, oily sprays, and oily sweeping compounds should not be used on any asphalt tile floor.

We have indicated above that asphalt tile does not respond to mopping as readily as other floors. Clear-water mopping may remove most of the surface soil, but usually leaves the floor dull and some times streaked. Dry buffing with fine steel wool under a floor machine will restore some of the natural gloss. The new polishing pads also serve this purpose.

Conventional floor sealers, varnish, and lacquer should never be used on asphalt tile. There are alcohol-cut resin sealers which may be used, but more recently developed, special emulsified plastic sealers seem more satisfactory. These sealers differ from the water waxes which are often used over the new sealers. These new sealers, however, form a more or less permanent coating, not unlike a very thin sheet of cellophane, increasing the gloss of the floor.

Waxing with a water wax emulsion is recommended for all asphalt tile, but often several coats are required to obtain a satisfactory gloss. However, if the right sealer is used first, a single coat of wax will often serve.

The sealed floor may also be finished with one of the newer waxless emulsified finishes which respond to buffing when scuffed almost as well as wax. It is also claimed the resin finishes are less likely to be slippery than wax, but nonslippery water waxes are available which contain a collodial silica.

Solvent-type waxes, including paste waxes, should never be used on asphalt tile. However, there has recently been developed a new type of paste wax which, if claims are justified, may revolutionize floor maintenance. These new pastes may be used on any kind of floor and are said to clean and wax simultaneously, making water cleaning no longer necessary. A steel-wool pad is used under the floor machine and about a tablespoonful of the wax is placed on one side of the steel-wool pad. The machine is then run over the floor in the usual way. It is claimed the paste dissolves the dirt which is drawn up into the steel wool, leaving a film of wax on the floor which is buffed during the process.

As you may already know, steel wool and the new abradant pads play a very important part in the maintenance of all floors. If the floor is very dirty, as it will likely be at this time of the year, steel wool and the cleaning solution are needed to get it clean. If there is an old coating of wax, it should be removed with a good wax stripper and steel wool. apply the stripper and let it stand for 30 minutes or longer, to soften the old coating, and then use the steel wool, usually No. 0 grade, though a coarser grade may be necessary.

Vinyl Floors

There are two general classifications of vinyl floors, though there are variations in quality and designs. The most popular of the vinyl floors is the vinyl-asbestos and is the kind most extensively used in new schools. In appearance it can easily be mistaken for a good asphalt tile and vice versa. If mistaken for asphalt tile, no harm can be done in the matter of maintenance, but if the reverse occurs real damage to the floor can result. We have already explained that solvents, oils, and grease tend to dissolve asphalt tile. Such is not the case with the vinyls. They are immune to all these elements. Therefore, if you should be placed in charge of a floor with which you are unacquainted, you can make sure if it is asphalt tile by rubbing it with a white cloth, moistened with gasoline or lighter fluid. If the color comes off on the cloth, the floor is asphalt.

The same cleaning processes recommended above for asphalt tile may be employed for vinyl-asbestos, except, if desired, oil-treated dust mops and oily

sprays may be used with safety. This does not mean that oil or grease left standing on a vinyl floor will not cause a stain. Such a condition will cause a stain on any floor, but such stains can usually be removed from vinyl without damage to the floor. The vinyls are all highly resistant to mild acids and to alkalies; but, as in the case of asphalt tile, alkaline solutions seep down between the tiles and tend to loosen them from the subfloor. To avoid repetition of this statement let me say here that alkaline solutions may react against the adhesive that holds any resilient floor to the subfloor.

While vinyl-asbestos is by far the more widely used of the vinyls, largely because of its lower cost, the flexible vinyl-plastic, often referred to as "pure vinyl," is better because it never becomes brittle as does vinyl-asbestos and asphalt tile when they become very cold. Also, like rubber tile, it has an indentation resistance of 200 lb. per square inch as compared to 25 lb, for vinyl-asbestos and asphalt tile. It also has a higher gloss and is easier to maintain. But it costs considerably more than vinyl-asbestos and is no more resistant to oils, greases, alkalies, and mild acids. Therefore, it may be maintained very much the same as just described for vinyl-asbestos, the exception being that a sealer is seldom needed.

Sheet vinyl is very much like the flexible vinyl-plastic but comes in rolls like linoleum. It is maintained exactly like the vinyl-plastic.

Rubber Tile

Rubber tile and vinyl-plastic look and feel so much alike that it is difficult to always tell them apart. However, it could be a mistake to confuse them on the floor. Rubber tile is somewhat less expensive and serves every purpose of the vinyl-plastic, except in the matter of maintenance and protection. Oils, greases, mineral solvents, etc., can ruin a rubber floor. Therefore, oily dust mops, oily sweeping compound, and oily sprays should be avoided. Wax-type sweeping compounds may be used on any resilient floor.

Soap cleaners are not recommended for use in rubber tile, though mild alkaline cleaners may be used if needed. The synthetic detergents are especially approved for cleaning rubber and, when necessary, augmented with steel wool or an abrasive pad. Except that solvent-type waxes should not be used on rubber, the other finishes approved above may be used with safety. Dry cleaning with fine steel wool is approved by most manufacturers of all types of resilient floors; if the floor has been waxed, the dry buffing is even more effective. Old wax coatings are removed as described for the vinyls.

Care of Linoleum

Though linoleum is very durable as a flooring, it can be easily ruined by improper maintenance. Being made largely of linseed oil, all alkalies are its natural enemy. While the results of faulty cleaning may not become manifest for weeks or months when it does become evident, it is generally too late to remedy the condition. It has been said that linoleums are seldom worn out but are usually washed out. Excess water should be avoided, using just enough to be effective. While neutral soaps may be used, the nonalkaline synthetic detergents are preferred. The special sealers may be used but are less necessary unless the linoleum is old and worn. Either the solvent waxes or the water waxes may be used with safety on linoleum, as can also the waxless resin emulsions.

If the linoleum has already become "washed out," or has become brittle, curling, and cracking, it can sometimes be partially reclaimed by applying a coat of hot boiled linseed oil, well rubbed in. After an hour or so the surplus oil should be rubbed off.

Handling Cork Floors

While the use of cork floors is probably limited in schools, being the least resistant to hard usage, it is the quietest of all flooring underfoot except carpeting.

Here again, the use of alkaline cleaners must be avoided. Also, do not use too much water. Neutral soap or synthetic detergents may be used for cleaning. If very soiled or stained from traffic, light sanding may be resorted to. Cork is the only resilient floor that may be sanded. A disk-type floor machine should be used, first with medium-grade paper, then coarser if necessary, but finishing with a fine grade. The sanded floor should then be given two or three coats of solvent wax, paste preferred, each buffed when dry. Thereafter, the floor may be maintained with water wax or one of the waxless resin finishes.

Cork floors are rather easily stained, so oily dust mops, sprays, and sweeping compounds should not be used. Dry steel-wooling often relieves the need of more frequent mopping.

Terrazzo

Since a good terrazzo floor consists of 70 per cent or more of marble chips, it is the marble component most to be considered. Acid is the natural enemy of marble, strong acids actually dissolving it. Mild alkaline cleaners may be used if necessary, though neutral synthetic detergents are generally recommended. Soap cleaners are not favored for use on terrazzo and marble.

Steel wool is not approved for use on terrazzo, since fine particles of the wool left on the floor may rust and cause difficult stains. When scouring is needed (as it often is especially near entrances) use the synthetic detergent and one of the new nylon scouring pads. Or an abrasive powder may be used by first wetting the floor, sprinkling the abrasive on, and scouring with a stiff brush. Thorough rinsing should follow an abrasive powder cleaning to remove all grit. A vacuum cleaner is ideal for picking up the grit with the water.

Regular varnish-type or lacquer-type sealers should not be used on terrazzo, but there are available regular colorless terrazzo sealers. Some of these are plastics dissolved in a special solvent and others are emulsions. They should fill the surface pores without leaving a surface film. Such a sealer retards early resoiling. Waxing with a water wax or an application of waxless resin finish may be used if desired, although some authorities do not promote waxing.

When the wall bases are badly discolored from careless mopping, make a "whitewash" of a good abrasive powder and hot water. First wet the base and then apply the whitewash heavily. Let it stand for 24 hours, after which scrub with the same solution and a stiff brush.

Wood Floors

In conclusion, a few brief words seem to be in order regarding the maintenance of wood floors. Avoid the use of water as much as possible in cleaning wood floors; and alkaline cleaners cause wood to deteriorate. The only time an alkaline cleaner is called for is to remove floor oil or grease, in which case the floor is first wetted, a limited portion at a time, then sprinkled freely with trisodium phosphate, and scrubbed. Repeat in a week if the imbedded oil comes to the surface. Always rinse well to avoid a salty residue when the floor dries. There are regular oil absorbents available.

If the floor is cupped, rough or badly discolored, it should be sanded with a drum sander which can be rented for the purpose. After sanding give the floor two or three successive coats of good floor sealer, steel-wooling each coat when dry. Except in the case of the gymnasium floor, waxing is then recommended, either with water wax or solvent-type wax.

A badly soiled wood floor is best cleaned with a solvent-type cleaner or with liquid-solvent-type wax. While the cleaner or wax is still liquid, scour the floor with steel wool and follow with dry mopping. When dry, buff to a polish.

If a fresh coat of sealer is to be applied over an old coat, first patch the worn places with the sealer, beginning in the middle of the spot and feathering the sealer out at the edges to avoid overlaps. Steel-wool when dry and then go over the floor with the sealer. ■

Federal School Aid at the Crossroads

ELAINE EXTON

Will the 87th Congress which begins its two-year term on January 3 enact school aid legislation of major significance? If so, in which directions will it move — down the path to new special purpose categorical aids or along the broader avenue of general federal financial support for education? Or will both these approaches win Congressional approval?

If the incoming Congress blazes a new trail by adopting a general public school aid measure, will its action be limited to school construction assistance for an emergency period or sanction a "massive transfusion" of federal grants on a permanent basis to be used for public school teachers' pay or building facilities as each state determines?

If categorical aid becomes the favored alternative will the new Congress seek to open up routes to such new grants-in-aid activities as the education of migrant children, or prolong the life of the National Defense Education Act of 1958 whose program authorizations will expire during its second session?

In the event the latter course is followed, will the National Defense Education Act (NDEA) be continued as presently organized, with emphasis on its defense aspects, particularly in strengthening instruction in science, mathematics, and foreign languages? Or will Congress approve revisions which would extend across the board aid to all major curriculum areas, including social studies and English, in an effort to meet the criticism that the NDEA as presently constituted has fostered imbalance in the curriculum?

These are some of the competing proposals affecting the Federal Government's role in education which are vying for attention in the nation's capital as the inauguration of a new President draws near.

School Construction Prospects

As this article goes to press, the prospects for enactment of some form of school construction aid appear promising, but not certain. If the Powell Amendment, for instance, providing that school facilities built with the help of federal funds "be available to students without regard to race, creed, color, national origin, or religion in accordance with the decisions of the U. S. Supreme Court," is made a part of the legislation when it reaches the floor of the House, this might again prove an unsurmountable obstacle as was the case in 1956 and 1957.

Or such a development might lead to a resumption of delaying tactics by the House Rules Committee whose stalling last year kept a House-passed school construction measure with the Powell Amendment in it from being sent to Conference with the Senate. Should such a rider reach the Senate floor a lengthy filibuster might ensue.

This situation is not likely to be eased by the circumstance that barring some drastic Congressional reorganization, which at this writing appears unlikely, or other unexpected event, Representative Adam Clayton Powell, who represents Harlem in New York City, will, because of his seniority position as its top-ranking Democrat, become the new chairman of the House Committee on Education and Labor.

Where the Candidates Stood

Among the encouraging aspects is the fact that during the election campaign both Presidential candidates endorsed a policy of federal aid for school construction, although the methods they proposed for furnishing the money differed, the Democratic position backing federal funds for flat grants to the states to be used at their discretion for building classrooms or paying teachers' salaries in public elementary and secondary schools, and the Republicans supporting federal payments for principal and interest charges annually falling due on school construction bonds during an emergency period.

Promised candidate John F. Kennedy: "One of the *first* items on the Democratic agenda in 1961 is the passage of an adequate bill for school construction." Stating that "the old system of financing schools primarily from property taxes is no longer sufficient," he argued: "It is time for action in public education — not for federal control — not for federal replacement of local effort — but for emergency federal action to help halt the decline in American education."

At the press conference where he threw his hat into the Presidential ring in January, 1959, Senator Kennedy in replying to a reporter's question as to whether he would support a bill for teachers' salaries as well as school construction commented: "I am not convinced that that is wise. Today I am only in favor of school construction. It seems to me it is really better for us to put a substantial federal effort in this area and permit the states to determine the range of teachers' salaries.

"Once the Congress begins to set teachers' salaries, I think it raises a good many questions which I think can be avoided by an effective program of federal aid to education through school construction."

Subsequently, however, he voted for the NEA-backed Clark Amendment which proposed adding funds for public school teachers' pay to the pending school construction bill. In the election campaign his speeches listed federal funds for teachers' salaries *second* in his enumeration of the emergency federal action necessary "to build an educational system to meet our expanding needs."

For example, at a meeting held in Los Angeles on November 2, candidate Kennedy declared: "*Second* (school construction was put *first*), we have failed to provide enough well-trained and well-paid teachers. Today we need 135,000 more teachers. Almost three million school children are being taught by teachers working on substandard certificates. And as our school population expands in the next decade, one and a half million more teachers — one-third of all our college graduates — will be needed to keep our educational system going. We are not attracting bright young men and women into teaching because the salaries we pay our teachers are shamefully low. . . .

"In 1961, a Democratic Congress — under the leadership of a Democratic President — will enact a bill to raise teachers' salaries, a bill which can help start the flow of urgently

needed new teachers towards our schools."

In a position paper outlining his concept of a workable federal program in support of American education released on September 26, candidate Richard M. Nixon said regarding school aid:

"A cornerstone of federal support for American education must necessarily be a program of debt-servicing and matching grants, to the states, to accomplish two interrelated goals. First in importance is releasing state and local funds for urgent increases in teachers' pay by taking up a substantial share of the heavy burden of construction cost. The second goal — and the direct target of the grants-in-aid — is closing the gap, over the next five years, between projected enrollment and classroom space.

"It is imperative that teachers' salaries be raised to levels more nearly commensurate than now with their high professional calling and the rigorous training we demand of them. Surely it is true to say that our schools can never be any better than our teachers — and we will neither attract in the future nor keep the best men and women in the profession at the generally prevailing salary levels. At the same time, we must avoid the danger of rigid federal controls over who teaches and what is taught in our public schools — both of them properly matters of local responsibility.

"We can achieve these goals by earmarking federal funds matched with state funds, (A) for servicing debt already incurred for school construction (a new proposal which goes beyond any previous recommendation of the Eisenhower Administration in this area; (B) for servicing debt incurred for new construction; and (C) for grants which will enable the construction of new buildings to go forward on a pay-as-you-go basis.

"More of the local funds can then be used for teachers' salaries. Thus, we will be moving in simultaneously throughout the nation on three great problems of American public education: salaries, facilities, and substantial equality of opportunity. And we will do it without menacing the invaluable freedom of our schools by inhibitive federal control."

What the Party Platforms Say

Mr. Nixon ran on a platform advocating "federal support to the primary and secondary schools by a program of federal aid for school construction — pacing it to the real needs of individual school districts in states and territories, and requiring state approval and participation."

Noting that "there is a temporary shortage of classrooms for our elementary and secondary schools in a limited number of states," the Republican Platform says, "but this shortage, due to the vigilant action of state legislatures and local school boards, is not increasing, but is decreasing. We shall use our full efforts in all the states of the Union to have these legislatures and school boards augment their present efforts to the end that this temporary shortage may be eliminated and that every child in this country shall have the opportunity to obtain a good education."

"The respective states as a permanent program can shoulder this long-standing and cherished responsibility easier than can the Federal Government with its heavy indebtedness," it continues, maintaining that "any large plan of federal aid to education, such as direct contributions to or grants for teachers salaries can only lead ultimately to federal domination and control of our schools to which we are unalterably opposed. . . ."

In contrast the Democratic Platform voiced belief that "America can meet its educational obligations only with generous federal financial support within the traditional framework of local control" proposing that "the assistance will take the form of federal grants to states for educational purposes they deem most pressing, including classroom construction and teachers salaries. . . ."

It further states: "America's education faces a financial crisis. The tremendous increase in the number of children of school and college age has far outrun the available supply of educational facilities and qualified teachers. The classroom shortage alone is interfering with the education of 10 million children.

"America's teachers, parents, and school administrators have striven courageously to keep up with the increased challenge of education. So have states and local communities. Education absorbs two-fifths of all their revenue. With limited resources, private educational institutions have shouldered their share of the burden. Only the Federal Government is not doing its part. . . ."

Looking Ahead

The National Education Association presented testimony before the Platform Committees of both the Republican and Democratic parties, according to John M. Lumley, Director of the Legislative and Federal Relations Division of NEA. He reports that the Democrats "generally followed NEA recommendations" and predicts that President-Elect John Kennedy will include a broad federal support for education bill close to NEA recommendations in his immediate legislative program which will permit the states to establish their own priorities between school construction and teachers' salaries.

Nonetheless the outlook for prompt passage of a bill providing aid for teachers' pay is not as good as are the chances of enacting a school construction assistance measure.

When queried by a reporter from *U. S. News and World Report* as to whether aid for schools is likely in the new Congress, canny Sam Rayburn (D., Texas) who was first elected to the House in 1913 and is beginning his seventeenth year as Speaker, answered: "School construction, certainly. As far as other aid is concerned, there is a question in my mind as to whether Congress would go further than that at this time. They may do it. I think it is going to be advocated, and strongly, that we go into some plan for paying teachers' salaries and things of that kind, but there are a great many people who fear that. They think that, if the Federal Government goes that deeply into the school business, it will try then to dictate the curriculum, management of schools, and so forth. And so, many people want this left entirely to local hands."

Although the threat of a Presidential veto has been lifted by the election of a President who vigorously championed federal aid for education, including funds for teachers salaries, in the campaign, and for the first time since 1955 the nation will have a President and a majority of the Congress of the same party, most of the roadblocks which have halted the attainment of this objective in the past remain and some have been strengthened.

Because of the many factors involved, not only did Senator Kennedy's slim margin of victory fail to provide a clear mandate from the American people on this issue, but the election numerically strengthened the "conservative coalition" of Republicans and Southern Democrats which has opposed such legislation previously, and cut down the Democratic margin in both the House and Senate, reducing the number of Democrats in the House from 283 Representatives at the end of the 86th Congress to 262 at the beginning of the 87th and raising the Republican membership of the House from 153 to 175."*

*These figures were in accord with the latest tally available from the Clerk of the House at the time this article went to press.

TRIPLING a shower room's CAPACITY with emphasis on safety

Imaginative engineering found a "better way of doing things" to solve the problem of overcrowded locker and shower room conditions at Niles Township East Community High School. Not only was locker space greatly increased and shower capacity tripled—the shower room itself was provided with major safety benefits, practically foolproof water temperature regulation and economy of operation.

The showers are the progressive type, used primarily for warming up or cooling down on entry or exit to pool or gym. Located in what was once unused space, they are arranged in three double tiers, one set at 95°, one at 100° and the other at 105° by means of three Powers Hydroguard Thermostatic Controls.

Showers are operated from a convenient panel to which only the instructor has access. Here, through an "on" button, a timer actuates three valves connected to the Hydroguards to limit water flow to 10 minutes. The shower system can be shut off at any time by depressing an "off" button which automatically re-cycles the timer. In addition, individual switches for each tier provide manual operation when desired.

Core of the system is the Powers Hydroguards, set to the previously mentioned water temperatures. The Hydroguards protect the bathers at all times against temperature fluctuations that might cause scalding or other mishaps. Should either the hot or cold water supply fail, they immediately shut off the showers.

From an operational standpoint, four-year figures show that controlled timing and controlled temperature can lower a school's budget through water and fuel conservation.

Niles Township East Community High School

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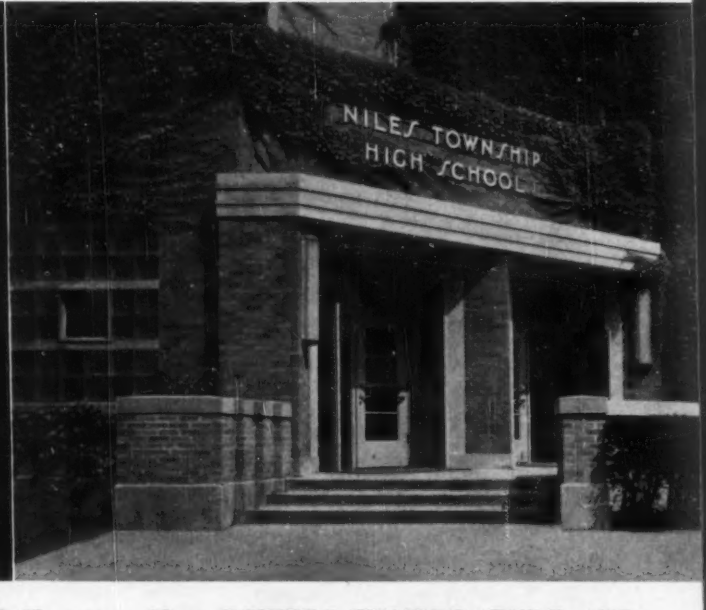
Consulting Engineer: John S. Horner, Libertyville, Ill.

Plumbing Contractor: Chas. Conrick Co., Chicago, Ill.

Head Custodian: Jules P. Roels

Upper photo on facing page shows Jules P. Roels at the operating panel.

In lower photo, John S. Horner and Edwin C. Bruno stand at pool end of shower.



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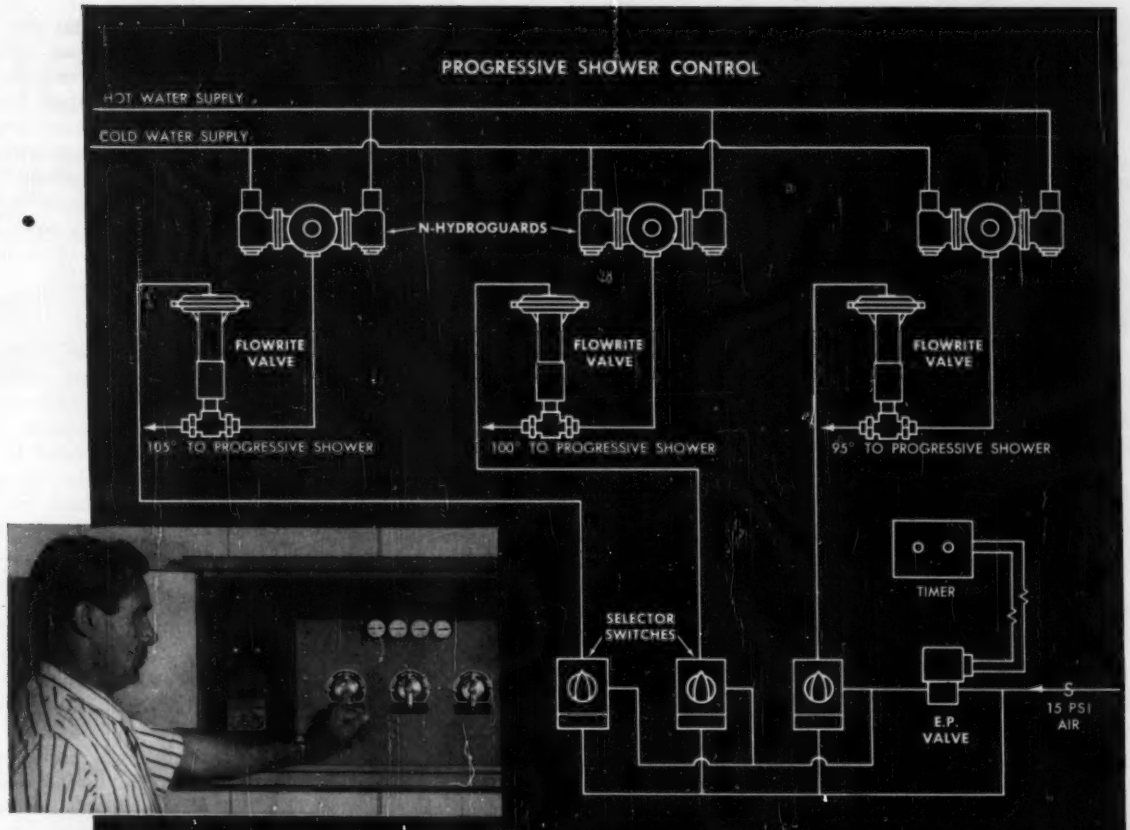

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SCHOOL BUILDING, 1961

THE year 1961 will offer school boards opportunities and challenges never before to be met in school planning, financing, and construction. Vast growth in enrollments, record-breaking funds made available by bond issues and direct tax funds, new and radical changes in school organization, particularly at the high school level, new purposes and teaching devices in special fields of instruction leading to new types of instructional areas, new advances in materials and devices for thermal and illumination conditioning of school plants — all these areas of progress and growth will provide school boards with new and enlarged opportunities for bettering the education of American children.

School Bonds

School bonds issued in 1960 exceeded an estimated $1,960 million, the largest amount voted in any single year. In the November 8 elections, the Investment Bankers' Association reported, 82 per cent of the proposed issues were voted favorably, and 85.6 per cent of the total sums asked were approved. Current building funds available from direct tax income are difficult to estimate. In the past year, they have exceeded one-third of the capital outlays of local school districts. All of these huge sums available for school contruction mean that school building activity in 1961 will be slightly above the work undertaken in 1960 in dollar value, but construction will not increase in floor area.

The cost of bond money is not likely to change radically in the near term. The new Democratic administration may be expected to move with caution in any changes it proposes in national fiscal policies, so that school bond prices, at least those in the top class ratings, will not change to any alarming extent. School bond interest could be lowered by greater support of the weaker districts through state and federal help. In spite of the promises made in both the Democratic and Republican platforms, there seems to be little hope of federal legislation until late in 1961. The present Washington situation is so confused that local school boards can but solve their problems of needed buildings by prompt action toward the issue of local bond issues.

Important Changes Ahead

The broader use of television and of the older types of audio-visual materials in elementary and secondary schools is certain to have a profound effect on the design and equipment of schoolrooms in the coming decade. Too little is known about the possibilities of television and of mechanical devices (teaching machines) to predict the changes needed to adapt these innovations into effective, economical teaching instruments. The new language laboratory with its electronic aids, the current experiments in science laboratory layouts, and the proposed separate study cubicles, give promise of new and important changes in high school buildings. The educational significance of research studies, authorized by the U. S. Office of Education and to be carried on by the N.E.A., several universities, and the Scientific Instruments Association, should prove in a year or two whether the newer teaching theories and the commercial experimentation are valid and deserve attention in new sizes and forms of laboratories and other rooms. It is certain that over-all changes in high school layouts will be required by the new school-within-a-school organization, the teaching team setups, and the greater separation of track groups for vocational and college-preparatory work. Certainly, high schools will be larger in enrollment as the centralization of school districts continues and educators continue to solve the problems of group and individual instruction of students caused by the size of buildings.

Design Problems

More than ever, school buildings are designed from the inside with strong emphasis on the efficient uses of teaching areas of assembly and physical instruction spaces, and provisions for quick circulation of student groups. The result has been that exterior design has tended to be rectangular and extremely simple and flat. In the past year, a number of architects have broken through the accepted monotony by new and interesting windbreaks with geometric forms of title, metal, or cement. Roof lines have been broken by small gables above entrances or bold, oval roof forms over assembly rooms and gymnasiums. In contemporary school design, the qualities of beauty and interest can be had only when the architect uses skill in the choice of materials and color, good proportions of the overpowering window areas, and logical emphasis on the dignity of the total building and its setting. It is encouraging that architects are finding new means of making classroom interiors, auditoriums, and even school shops attractive by the use of simple but well-designed details, wall areas and built-in fittings, floors, and lighting services. Color is more than ever a valuable adjunct to "happy" schoolrooms.

More State Help Needed

The variety and amount of help given by State Education Departments in the solution of local school-plant problems has grown enormously in the past two decades. The improvement has been uneven and the least betterment can be noted in the states where the school boards are isolated and the need is dire. As a routine matter New York, Pennsylvania, California, and other states give superior professional advice, supervision, and financial aid to small school districts. Every state should give consulting and financial service if the school boards which have the greatest difficulties and sparse funds are to do creditable jobs of planning and construction. Relatively few states exert the power of their superior credit to aid weak school districts and overcome the inequalities in a low tax base and small pupil enrollment. The redistricting of school administrative units cannot be relied upon to solve the problem of state help in meeting school-plant needs. Legislation is needed to support local credit and to provide a flow of state funds. A higher quality of state department personnel is needed in a minority of the states for the guidance of local school authorities. Too few states and local school authorities make use of available skilled specialists.

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SCHOOL LIGHTING

(*Concluded from page 33*)

we have thoroughly recognized the fact totally balanced environment in the building. No schoolroom should be designed just for lighting; neither should a schoolroom today be designed without meeting the lighting criteria. These criteria are now well established by research and have been verified by the Blackwell studies. We have the ability to measure the results of our lighting design and technical advances have made many proper solutions possible. Good lighting fixtures meeting all of the criteria for classroom lighting are no more costly than many fixtures which do not meet the criteria. Conditioning the thermal environment has become possible because mechanical equipment has become less expensive, more efficient, more compact and quieter, thus making its school use logical and practical. There is now no excuse for a school board or a superintendent to accept less than satisfactory lighting in any new school construction.

A Look Ahead

What of the future? As a base, we should certainly be able to guarantee lighting conditions which will be safe for the eyes of all our pupils. After schools have met these current criteria as a minimum, we should look ahead to further refinements and advances by imaginative lighting engineers. Many possibilities occur to mind when we discard the preconceptions of the past. Why, for instance, should all of the classrooms in a school building be lighted in exactly the same manner? If the flexiole classroom is utilized for more than one purpose at a given time, why not have some changed intensities in accordance with the needs of the tasks being performed in the several areas of the classroom? Instead of one or two switches controlling all of the lights in the classroom, might it not be advantageous to have many individually controlled lights, and even sections of ceiling lights controlled by a rheostat? New and efficient fixtures are being designed and should be tested and utilized where improvements can be made. And is there any real reason why the color of the lighting should be the same, any more than the color of all schoolrooms should be the same? Controlled color tone could certainly be varied from time to time within the classroom as a whole or in certain locations as interest points.

Standards and criteria are necessary, of course, but they establish only the minimum. Let us not be so standard in what we think and do that we prevent the advances that imaginative experimentation can produce. Let those who can do some dreaming. ■

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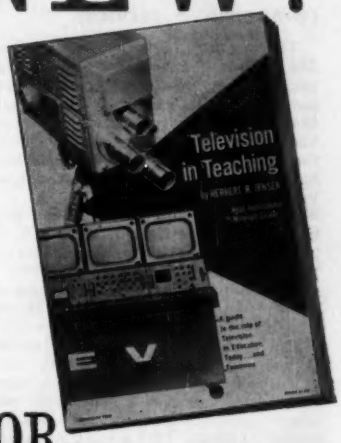

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what schools are doing about...

co-operative services

The school districts of St. Louis County, Mo., for a number of years have made possible many co-operative school services, among them a film library and an educational television program. The current budget for co-operative projects is more than $200,000 with school contributions based upon pupil enrollment and assessed valuation.

A major activity has been the promotion of desirable legislation. This is being handled by a legislative committee composed of six school board members and six superintendents. Board members serve on all committees and assume an active role in the co-operative program.

The agenda for the last conference in October, 1960, includes (1) tax favored annuities for school employees, (2) agencies and opportunities for improved educational opportunity for emotionally-disturbed children, (3) a county-wide levy to equalize educational opportunity, (4) a change in teacher retirement law, and (5) a proposal concerning the University of Chicago study. ■

helping difficult learners

In the Binghamton, N. Y., junior-senior high school three programs are now in operation aimed at students with serious learning problems. Each year in June, a number of seventh and eighth graders with learning problems are selected to participate during the following year in a daily school schedule designed to help remedy their weak areas. A maximum of 25 pupils in each section is placed under the care of a single teacher four periods daily for individual attention in English, mathematics, citizenship and supervised study. Remaining periods are devoted to exploratory courses in science, art, home economics, industrial arts, music and physical education.

One program consists of a special class where group work is supervised by a teacher trained to work with handicapped pupils. These students also take minor subjects listed for the core group.

Three classes in remedial reading compose another program. The classes are conducted for students in the seventh and eighth grades who may benefit from additional help in reading speed, comprehension and vocabulary. Assignment to this group is voluntary after student selection through teacher recommendation and testing. ■

married students

To meet the growing problem of married high schoolers, many boards of education have adopted new policies in this area. Among the reports:

In Starkville, Miss., the school board has adopted new regulations governing married students in the high school. In the event of marriage, a student will have a conference with the high school principal for an understanding of special conditions that apply to the student's attendance at school. Married students may take any academic subjects offered in the curriculum, may participate in graduation, may attend school functions such as junior-senior banquet and senior parties, and may be recognized as a valedictorian or salutatorian. Such students may not hold an elective office, position or honor, may not participate in school plays or any inter-school activity, and may not become a member of the National Honor Society. A married student must consult with the principal regarding any extracurricular activity and be governed by the former's opinion.

In Marion, Iowa, the school board has adopted a policy concerning married students, specifying that they are permitted to attend classes, but will not be allowed to participate in any extra-social or after-school activities.

In Bloomfield, Ind., the school board has adopted regulations under which married students must declare their married status at the time of enrollment. They may not serve as class officers, belong to school clubs, take part in school plays, or represent the school.

curbing vandalism

In Grants, New Mexico, the school board and Supt. M. B. McBride have adopted a program to curb vandalism in the city's schools. The program includes:

1. *Fencing.* Several schools were fenced in and others are scheduled for fencing.

2. *Lighting.* Lights have been put around the district's high school and junior high school.

3. *Tighter security control.* Definite responsibility for supervision of closing windows and locking doors at night has been assigned.

In addition, there must be *supervision of groups that use the school building at night* to make sure the building is closed.

4. Windows and doors needing repair would receive continuing maintenance attention. ■

understanding the budget

The school board of Templeton, Mass., in co-operation with Supt. Gregory C. Coffin, recently issued a pamphlet which had been prepared in support of the local school budget for Templeton and Phillipston. All of the work of preparing the statement was done by staff members and students from the regional high school. Prepared along with 11 other pamphlets to be distributed at an open house program held during American Education Week, they were designed to attract as many taxpayers and citizens as possible. Several of the pamphlets were blown up to poster size and exhibited in the lobby of the high school. Copies were distributed to some 500 persons attending the general orientation session in the school auditorium.

The results of the "soft sell" program were most gratifying as evidenced by the favorable turn in public opinion toward school expenditures. ■

school plan re-use

In Prince Georges County, Md., about one half of the new schools in the $26.5 million building program will be copies of existing buildings. Thomas Gwynn, assistant superintendent in charge of planning, said this will save money in four ways, principally in architects' fees. Architects usually get six per cent of the cost of a school building. It was pointed out that contractors can buy building materials more cheaply because of experience with the original school; construction time can be reduced by 20 per cent; and upkeep becomes less because the maintenance department knows from experience what to do if things go wrong. The first four schools in the program will be reproductions. The three-year program calls for 17 new schools and 24 additions. ■

The fifth meeting of the Joint Committee of the American Association of School Administrators and the Associated Exhibitors of the NEA took place in the Chase Hotel in St. Louis, Mo., on October 8. The discussion covered such topics as obtaining a reasonable balance between the many phases of convention activities helping superintendents to plan their convention to take the fullest advantage of the exhibits, etc. Participants of the meeting include, seated (left to right: Ellsworth C. Dent, Coronet Films; Roger M. Warren, Standard Electric Time Co. (secretary-treasurer); Richard E. Carpenter, NEA; John R. Rowe, Encyclopaedia Britannica; (standing) William J. Ellena, AASA; Charles S. Stock, American Air Filter Co.; Philip J. Hickey, superintendent of schools in St. Louis, Mo.; Shirley Cooper, AASA; Zep. Marsh, Minneapolis-Honeywell; Kemp Huber; Weber Costello Co.

BOND RATINGS

(*Concluded from page 37*)

We want to know how much the taxpayers of the community owe, and how much they are likely to owe five or ten years hence. We want to know how thoroughly revenue sources have been exploited, how aggressively taxes are collected, whether there are any hidden resources. We also want to know something of the character and ability of the management. These financial factors are worth about 25 per cent of the total. Marketability factors will make up the remaining ten per cent.

During the prosperous 1920's, many communities borrowed money which they found difficult or impossible to repay in the depressed 1930's. The actual level of debt, whether expressed as a percentage of property values or on a per capita basis, had little connection with the incidence of default.

Perhaps the greatest number of protracted defaults during that period occurred in rapidly developing suburban residential communities in which streets, sidewalks, sewers, schools, and other facilities were constructed to meet the anticipated needs of population growth which failed to materialize. The widespread use of assessment paper, payable from limited levies on relatively small parcels of undeveloped land, was a major contributor to these difficulties.

The experience of such communities some of which were in trouble of one sort or another until they were bailed out by the suburban migration following World War II, suggests a number of questions, all of which must be answered:

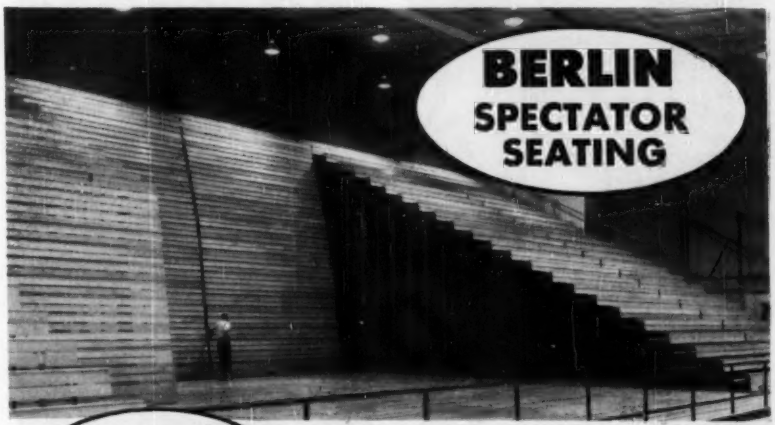
1. Is the population actually there, or is it only hoped-for?
2. Is the total debt supportable by the present inhabitants under any foreseeable business conditions?
3. What additional financing is to be expected, either from the unit under consideration or from any other unit taxing the same properties?
4. Are securities payable from unlimited taxes on all the property in the community, or are there limitations which might prove troublesome at some future date? There are many other questions, but these will provide an idea.

When Defaults Occur

Defaults usually of much shorter duration occurred in industrial or rural communities where the business depression made it difficult, or even impossible, to collect taxes.

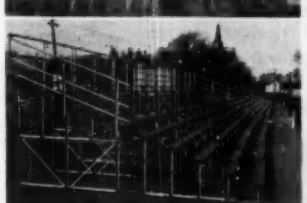
Such situations showed extremely wide variations in cause and effect. There were cases in which the single factory was closed — temporarily or permanently — and left the population unemployed. In other instances, the single major industry was in a state of collapse. Bank failures left many towns virtually without cash. Dust storms and crop failures crippled rural trading centers.

On top of this, officials of communities reacted differently to the difficulties thrust upon them. Some paid up promptly despite severe hardships. Others simply refused to press their taxpayers (friends, neighbors, and voters) in what they regarded as the interest of big-city bankers. Complicated mandamus procedure and involved litigation was a frequent result and some state governments took the debtors side. ■



EZ·A·WAY FOLDING BLEACHERS

BERLIN OUTDOOR SEATING



WRITE for complete details and engineering data for your requirements.

• STANDARD • DELUXE • OMEGA
• MOBILE • FORWARD FOLD GYM SEATS

Offer you these original construction Features: Square tubing; Steel understructure; Floating action - an innovation in EZ-A-WAY Bleachers; Slide support - designed to lock successive rows. Deluxe EZ-A-WAY Bleachers provide maximum comfort for premium seats . . . colors to harmonize with your gymnasium.

OMEGA EZ-A-WAY — ELECTRICALLY OPERATED is the last word in comfort, capacity, convenience. Mobile EZ-A-WAY Bleachers (two types) are the finest available . . . ROLLOMATIC is equipped with heavy duty large ball bearing wheels.

EZ-A-WAY FORWARD FOLD GYM SEATS provide maximum use of all available floor space - safe . . . modern convenient . . . positive floor attachment in every position.

STEEL DECK GRANDSTANDS

Three types of construction: Standard - furnished with 2" x 10" select structural Douglas Fir seat boards. Alternate - All Aluminum Seat Boards - grandstands, furnished with 10" wide all aluminum anodized seat boards. Alternate - grandstand furnished with (2) 2" x 6" select structural Douglas Fir seat boards.

PERMANENT GRANDSTANDS

Rugged dependable construction of basic design with safety in mind without sacrificing appearance . . . requires a minimum number of concrete footings. Roof structures available.

ALL-STEEL PORTABLE BLEACHERS

Stationary and Mobile . . . engineered and designed to provide maximum seating capacity both indoors and outdoors . . . standard interchangeable sections that permit additions vertically and laterally . . . can be dismantled and re-erected in minutes, without skilled help.

ALUMINUM PORTABLE BLEACHERS

No maintenance . . . no painting . . . lightweight . . . eye appeal . . . unequalled by any type bleacher . . . ideal for outdoor use . . . independent sections. Average weight only 9 lbs. per seat.

BERLIN CHAPMAN CO.
BERLIN
WISCONSIN

BERLIN SEATING ENGINEERS
BERLIN CHAPMAN CO. Berlin, Wisconsin U.S.A.

NEW PRODUCTS

VINYL-COATED GYM SEATING

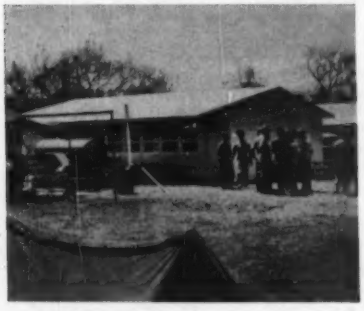
Folding gymnasium seating made of vinyl-coated steel is an innovation of the school equipment division of the Brunswick Corp., Kalamazoo, Mich. Called "V.O.S.," the seating combines the strength and durability of heavy gauge steel with advantages of vinyl coating. The vinyl coating deadens noise and has a luxury look of leather in shades of brown, allowing a color-co-ordinated program for indoor gymnasiums. The seating is scratch- and heat-resistant, and may be cleaned easily with ordinary detergent. A safety slope front enables athletes to break their falls before contact with the seating. Movable skirtboard angles allow extra space for comfort. Any number of rows, which are operated singly, may be locked securely in place. Brunswick also offers the Crown line, a redesigned wood folding gymnasium seating with painted steel skirt and wood footboards.

Add Color to Gyms

(For Further Details Circle Index Code 01)

RUGGED PORTABLE CLASSROOMS

Almost every building on two islands in the Florida Keys suffered major structural damage during the recent Hurricane Donna. Among the few buildings that withstood the hurricane's wrath were the prefabricated portable classrooms made by Panelfab Products, Inc., of Miami, Fla. Even the school's roofs, with six ft. overhangs, were not ripped off by the wind. The classrooms were pressed into emergency service by the Red Cross and Civilian Defense personnel after the storm. The portables are built of rugged, lightweight aluminum honeycombe sandwich panels, which interlock to form a tight weather seal. The 700 sq. ft. interior assures adequate acoustics and lighting.



No Damage in Hurricane

(For Further Details Circle Index Code 02)

LOW MAINTENANCE TILE

Ceramic glazed, structural facing tile finishes many of the walls of Westlake Junior High School, near Erie, Pa. Fireproof Vitritile, 2 and 4 in. thick and 7¾ by 15¾ in. wide, were used in corridors, stairwells, under chalkboards, and in other areas subject to heavy scuff marks. Tile bull-nose units were used at all the external corners, as another easy maintenance feature. The tile eliminates the need for painting and lowers maintenance time and costs because a periodic wiping with soap and water is all that is needed to retain its clean, cool, new appearance. Complete information is available from Natco Corp., Pittsburgh, Pa.

Has Rounded Corners

(For Further Details Circle Index Code 03)

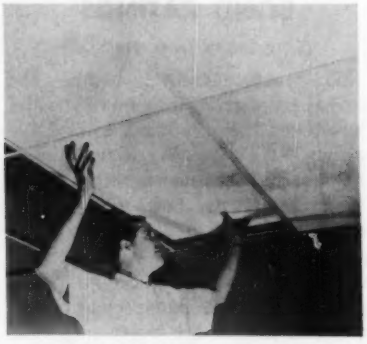
SCHOOL TELEVISION STANDS

A new line of mobile television stands with special school safety features is available from Transvision Electronics, Inc., New Rochelle, N. Y. An optional device allows the legs to function as elements of an indoor antenna. The stand comes 40 or 48 in. high, with 4-in. casters, and a wide base to prevent tipping. The shelf, which is insulated against electrical shock, has a one in. ledge and a safety belt to prevent the set from slipping. Equipped with a tilting device to eliminate light reflections, the stand will accommodate any make of television receiver.

(For Further Details Circle Index Code 04)

FIRE RESISTANT CEILING

An important development in the institutional construction field is a new type of suspended acoustical ceiling by Armstrong Cork Co., Lancaster, Pa. The Armstrong Acoustical Fire Guard lay-in system employs special fire-resistant ceiling panels, 2 by 4 ft. in size, instead of tiles. The panels rest in an exposed grid suspension that has been designed to withstand intense heat from a fire. Tiles are easy to install and remove for servicing plumbing, air conditioning, and other utilities. The manufacturer claims its installation cost is comparable to plaster and metal lath ceilings with the advantages of sound absorption, dry installation, and the rated fire protection for structural steel. No additional fire proofing is needed above the ceiling. Send for details.



Ceiling Panels Fit Into Grid

(For Further Details Circle Index Code 05)

LOW-COST TEACHING MACHINE

A teaching machine priced at $20 is now available from Grolier Inc., New York 36, N. Y., publisher of The Book of Knowledge, the Encyclopedia Americana and other reference works. Machine programs and programed textbooks, which can be used independently of the machine, cost from $5 to $15. The device and the instruction material are being produced and marketed under a co-publishing agreement between Grolier and Teaching Machines, Inc., of Albuquerque, N. Mex., whose president, Dr. Lloyd E. Homme, worked on the nation's first teaching machine research project. Courses are now available in Russian, spelling, algebra, statistics, Hebrew, and fundamentals of music. Other subjects will be available in the near future.

Available With Text Books

(For Further Details Circle Index Code 06)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION

STADIUM LIGHTING SYSTEM

Improved visibility for football stadiums and other outdoor sports areas is provided by "Quartzline" incandescent lamps by the General Electric Co., Cleveland 12, Ohio. The new lamps, which are being tested at the Brush High School athletic field in Cleveland, double the amount of

Only Two Light Poles Needed

light on the field without increasing wattage or the number of bulbs and fixtures. Two poles are used on either side of the field to hold the fixtures, which project a light beam of a narrow vertical and wide horizontal shape. The lamps, which come in weather resistant quartz tubes, ⅜ in. in diameter and 10 in. long, last twice as long as conventional light sources, and maintain their original light output and lifetime efficiency. The lamps may also be used for exterior floodlighting of buildings.

(For Further Details Circle Index Code 07)

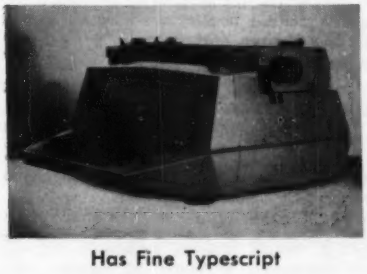
ALL-PURPOSE EXTINGUISHERS

The Fyr-Fyter Co., Dayton 1, Ohio, has produced two large-capacity pressurized portable fire extinguishers that will halt all three major classes of incipient fires. The secret of the extinguishers is a dry chemical powder which discharges in maximum volume at 12 to 15 ft. range the instant the unit's grip-fit handle is squeezed. The new white enamel units are available in 20 or 30 lb. capacities, both approved by Underwriters' Laboratories and Factory Mutual.

(For Further Details Circle Index Code 08)

FOUR NEW TYPEWRITERS

At the 1960 National Business Show in New York City and the Business Equipment Exposition in Los Angeles, the Underwood Corporation, New York 16, N. Y., introduced a new line of three electric and one manual typewriter, as well as a new line of data processing equipment. Underwood, which recently merged with Olivetti, is producing all four typewriters at its Hartford, Conn., plant. The four machines are: the Raphael electric which produces typescript that has the sharpness of fine printing, due to variable character spacing and a carbon ribbon; the Forum electric features standard typewriter spacing and may be equipped with either carbon or fabric ribbon; the Scriptor electric is economy priced, featuring normal typewriter spacing and fabric ribbon; the Touch-Master Five is a light touch manual machine with normal typewriter spacing.



Has Fine Typescript

(For Further Details Circle Index Code 09)

SAFETY FEATURE SCHOOL BUS

The latest safety features and traditional truck durability highlight the 1961 Dodge S-600 school bus. Safety items include a special fuel tank, propeller shaft guards, progressive-type rear springs, and double-wrapped front spring eyes. Available are a 240-in. wheelbase chassis for 60 passengers, or a 258-in. wheelbase chassis for 66. A 318 cu. in. V-8 engine with 202 horsepower is standard.

(For Further Details Circle Index Code 010)

ASTRONOMICAL TELESCOPE

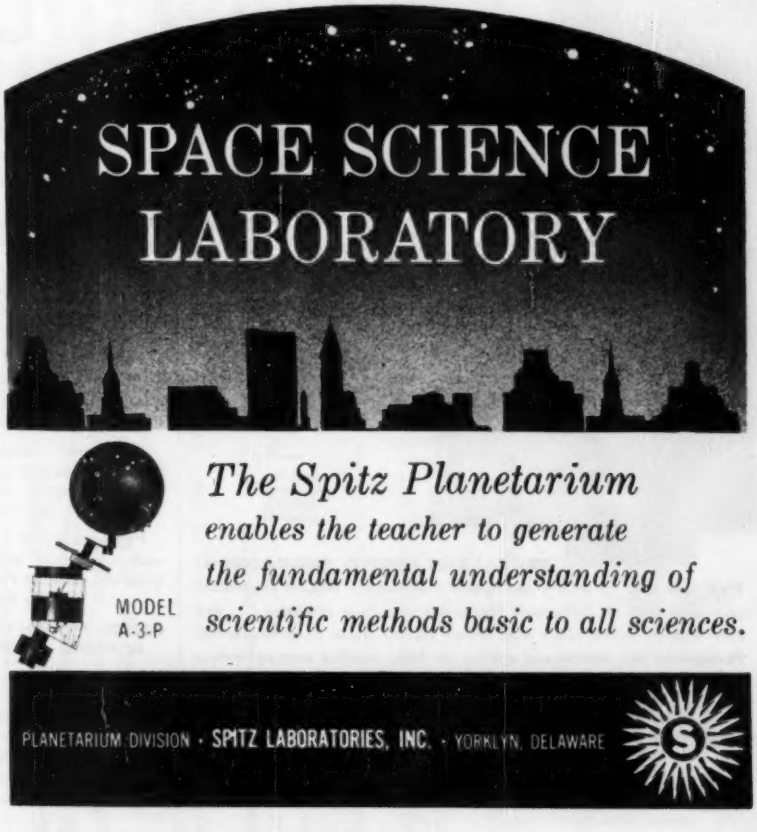
A new standard design 12-in. telescope, by Tinsley Laboratories, Inc., Berkeley, Calif., offers the accuracy of a professional observatory instrument but in a size scaled down for high schools and small colleges. Priced at about one third the cost of a custom built model, the telescope has a 12-in. diameter Cassegrain optical system

Professionally Accurate

which magnifies 80 to 800 times. An antibacklash feature keeps precise controls accurately set. The eyepiece focusing assembly is adaptable for accessories such as spectographs. This corrosion resistant telescope is equipped with a dustproof tube cover, a finder of 10 power, and is mounted on a 60 in. high steel pedestal with accessory compartment. The manufacturer has also designed a simple, inexpensive, vandal-proof shed for the telescope, which can be mounted on the school roof.

(For Further Details Circle Index Code 011)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION



110 **VOGEL-PETERSON**

CUSTOM-LINE
***Aluminum* HAT and COAT RACKS**

Tailored to fit any given open or closetted wall area. Smart in design and modern in "clear", "gold" deep etched anodized finishes and combinations. Quality built—closed-end aluminum tubing, rigidly held in cast aluminum brackets that are adjustable for height in dovetailed mounting extrusions. Brackets also adjustable to any desired centers.

3 BASIC SHELVES

1. Hat shelves with hanger bar for coat hangers.
2. Hat shelves with staggered cast aluminum coat hooks.
3. Hat or utility "plain" shelves for stacked tiers for general use.

Write for Bulletin CL-206

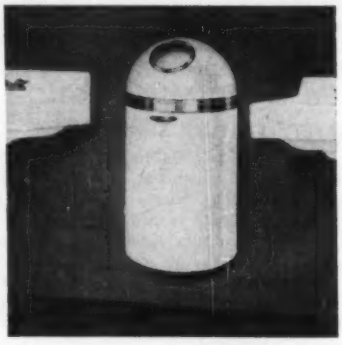
VOGEL-PETERSON CO.
Rt. 83 & Madison St. • Elmhurst, Ill.

NEW PRODUCTS

(*Concluded from page 49*)

WALL-HUNG RECEPTACLE

This attractive waste receptacle hangs on the wall and empties as easily as a wastebasket. The bottom part of the receptacle lifts off for emptying, then snaps



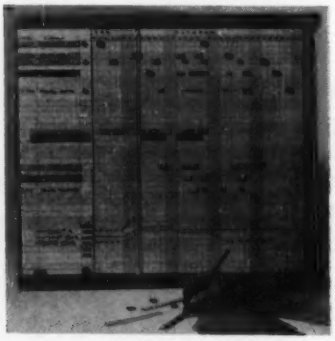
Easy to Empty and Clean

back into position. The unit is easy to install and keep clean; it saves space and reduces maintenance costs. Model 6006 by the F. H. Lawson Co., Cincinnati 4, Ohio, is of heavy gauge steel, bonderized against rust and finished in white baked enamel with a stainless steel trim. It measures 36 in. high, by 18 in. wide and 9 in. deep. Suitable for use in lavatories, health rooms, corridors, and vending machine areas.

(For Further Details Circle Index Code 012)

MOVING MAGNET CONTROL CHART

A Rol-a-chart Magnetic Visual Control Board offers versatility in all types of scheduling. The magnetic indicators, when



For Progressive Scheduling

placed on the rotating plastic sleeve, turn with the sleeve to bring pending projects closer to the "today" line. Available in six colors and in several sizes and shapes, the indicators have a write-on/wipe-off surface. Magnetic index strips permit easy rearrangement of index items. Made of handsome gray hammertone steel, each board comes with wall hangers, folding easel, carrying handle, and red and black marking pencils with extra leads. Send for colorful folder from Conley, Baltzer & Steward, Rol-a-chart Division, San Francisco 9, Calif.

(For Further Details Circle Index Code 013)

PREMIER
engraving company

Graphic Arts and Advertising GUILD of Milwaukee

EXCELLENT PHOTO ENGRAVERS!

We'll back that up with a closely-knit organization pledged to produce your work with an enthusiasm that meets your close schedules . . . and done with an expert touch that brings you the finest photo engraving. To augment this service and quality, we have installed new powderless etching equipment. This is in keeping with our policy to produce a superior product for our clients, with the most efficient methods.

PREMIER ENGRAVING COMPANY PHOTO ENGRAVERS
813 west winnebago street · milwaukee 5, wisconsin
BRoadway 1-3337 | 3338 | 3339

CATALOGS AND BOOKLETS

A technical booklet, "Architectural Design Considerations for Language Laboratories" has been published for school officials, architects, and consulting engineers by the research department of the **DuKane Corp.**, St. Charles, Ill.

(For Further Details Circle Index Code 014)

A four-page brochure, introducing the Aerohot MP multi-purpose portable cafeteria system, may be obtained free from the **Duke Mfg. Co.**, St. Louis 6, Mo.

(For Further Details Circle Index Code 015)

The design flexibiilty and functional advantages of glass blocks and modules are discussed in a 20-page catalog from the **Pittsburgh Corning Corp.**, Pittsburgh 22, Pa.

(For Further Details Circle Index Code 016)

Laminated wood beams, columns, and structural members can add low-cost beauty to a school building. Send for a free school construction catalog from **Rilco Laminated Products**, St. Paul 1, Minn.

(For Further Details Circle Index Code 017)

A manual containing instructions on all phases of wood gym floor maintenance is available free from the **Huntington Laboratories, Inc.**, Huntington, Ind.

(For Further Details Circle Index Code 018)

Photographs of ColorLine partitioning systems in modern offices and commercial buildings illustrate a booklet available on request from the **Unistrut Products Co.**, Chicago 7, Ill.

(For Further Details Circle Index Code 019)

CORRESPONDING CODE INDEX NUMBERS TO BE ENCIRCLED CAN BE FOUND ON THE CARDS IN THE READER'S SERVICE SECTION

Congratulations

To **Ditto, Inc.**, Chicago 45, Ill., makers of duplicating equipment, on the firm's 50th anniversary.

To **St. Charles Mfg. Co.**, St. Charles, Ill., on its 25th anniversary. The firm makes kitchen cabinets, custom storage and casework for schools and hospitals.

READER'S SERVICE SECTION

INDEX TO SCHOOL EQUIPMENT

The index and digest of advertisements below will help you obtain free information, catalogs, and product literature from the advertisements and companies listed in the new products, section. Merely encircle the code number assigned to each firm in the request form below, clip the form and mail it to THE AMERICAN SCHOOL BOARD JOURNAL. Your request will receive prompt attention.

Code No.		Page No.
10	Acme Chemical Co. Maintenance materials	8
11	Berlin Chapman Co. Folding bleachers	47
12	Butler Mfg. Co. Metal buildings	ins. bet. 8 & 11
13	Hillyard Chemical Co. Maintenance supplies	1
14	Hunt Pen Co., C. Howard Pencil sharpeners	45
15	Kohler Company Plumbing fixtures	4th cover
16	Maple Flooring Mfgrs. Assn. Northern hard maple	2nd cover
17	New Hermes Engraving Machine Corp. Engravographs	6
18	Planetarium Division, Spitz Laboratories Space science laboratory	49
19	Premier Engraving Co. Engravers	50
110	Powers Regulator Co. Temperature and humidity controls	42 & 43
111	Royal Typewriter Co., Div. Royal McBee Corp. Typewriters	3rd cover
112	Safway Steel Products, Inc. Telescoping gym seats	2

USE THESE CARDS

These cards are provided for the convenience of THE AMERICAN SCHOOL BOARD JOURNAL readers in requesting information on products, services, booklets, and catalogs offered by the advertisers in this issue.

THE AMERICAN SCHOOL BOARD JOURNAL January, 1961
400 North Broadway, Milwaukee 1, Wis.

Please ask the manufacturers, whose code numbers I have encircled, to send me the information, catalogs, or product literature offered in this issue.

ADVERTISING INDEX

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NEW PRODUCTS — CATALOGS AND BOOKLETS

01 03 05 07 08 09 010 011 012 013 014 015 016 017 018 019
02 04 06

Also information on _____

Name _____

Title _____ School _____

City _____ Zone _____ State _____

HAVE YOU SIGNED YOUR NAME AND ADDRESS?

THE AMERICAN SCHOOL BOARD JOURNAL January, 1961
400 North Broadway, Milwaukee 1, Wis.

Please ask the manufacturers, whose code numbers I have encircled, to send me the information, catalogs, or product literature offered in this issue.

ADVERTISING INDEX

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01 03 05 07 08 09 010 011 012 013 014 015 016 017 018 019
02 04 06

Also information on _____

Name _____

Title _____ School _____

City _____ Zone _____ State _____

HAVE YOU SIGNED YOUR NAME AND ADDRESS?

USE THESE CARDS

The cards below are for your convenience in requesting product information, catalogs, and literature from advertisers and firms listed in this issue.

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Postage will be paid by:

AMERICAN SCHOOL BOARD JOURNAL

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MILWAUKEE 1, WISCONSIN

FIRST CLASS
PERMIT NO. 1112
MILWAUKEE, WIS.

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MILWAUKEE, WIS.

READER'S SERVICE SECTION

(Continued)

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114	Thompson Ramo Wooldridge, Inc. ..... Dage television	45
115	Vogel-Peterson Co., Inc... Aluminum coat and hat racks	50

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02	Panelfab Products, Inc... Portable classrooms	48
03	Natco Corp. ..... Facing tile	48
04	Transvision Electronics, Inc. ..... TV stands	48
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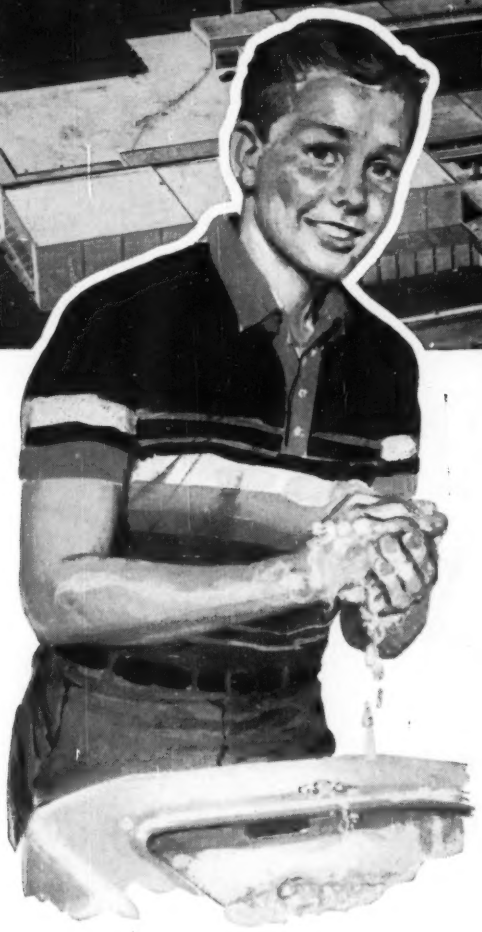
012	F. H. Lawson Co..... Receptacle	50
013	Conley, Baltzer & Steward, Rol-a-chart Div..... Control chart	50

CATALOGS AND BOOKLETS

014	DuKane Corp.	50
015	Duke Mfg. Co.....	50
016	Pittsburgh Corning Corp..	50
017	Rilco Laminated Products.	50
018	Huntington Laboratories, Inc.	50
019	Unistrut Products Co.....	50

South High School, Sheboygan, Wisconsin



Rugged school use?

. . . No problem with Kohler Fixtures and All-Brass Fittings

Kohler school fixtures keep maintenance costs low—even under rough treatment. They fit specific school needs. Clean-cut modern design, glasslike surfaces and smooth functioning encourage neatness.

The more than 200 Kohler fixtures in Sheboygan's new South High School include classroom, laboratory and service sinks; drinking fountains. The washrooms have Kohler lavatories, closets and urinals.

Typical of their staunch reliability is the Juneau vitreous china lavatory, with four inches of extended wall-bearing surface for extra firm anchorage. Practical for classrooms is the Addison built-in sink of acid-resisting enameled iron, with swing spout, and Duostrainer.

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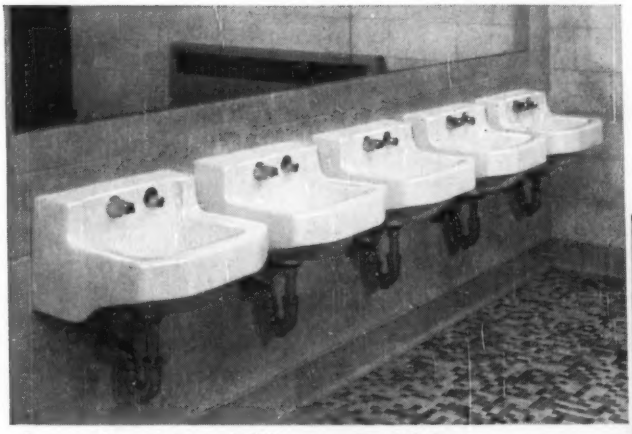

Juneau vitreous china shelf lavatory, K-1622-A.

Addison sink, K6650-A, with Simplex pantry faucet, K-7890.

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